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City of Troy

COASTAL ZONE MANAGEMENT PLAN

New York Coastal Zone Management Program

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New York Coastal Zone Management Program

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Coastal Zone Management Program

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The City of Troy, New York, has prepared this Coastal Zone Plan as an impetus for local coastal zone management and as a model methodology for other coastal zone communities.

Introduction

The history of Troy has been deeply interwoven with the Hudson River. The Hudson had for many years provided transportation, power and natural recreational resources for the citizens of Troy. However, as years passed, land use development within the Coastal Zone has most often ignored and many times maligned the Hudson River as a natural resource.

Re-enlightment is slowly occurring. With the advent of the new environmental consciousness of the 1970's, Federal, State and Local Governmental bodies have again recognized the true potential of the coastal zone. At the Federal and State levels, this realization has fostered program legislation (federal Coastal Zone Management Program, N.Y.S. Freshwater Wetlands Act, Federal Flood Insurance Program.) At the local level, (the coastal zone community) this same program legislation is implemented in the development of localized Coastal Zone Management Programs. It is with this understanding and intent that the City of Troy, Bureau of Planning and Community Development, has undertaken the task of preparing our Coastal Zone Management Plan.

Each work item that has been contracted by the D.O.S. and the City of Troy, will provide input for the local Coastal Zone Management Program and final regulatory legislation. The work item, (2.1) Goals and Objectives, is in fact, the initial examination of Troy as a coastal community so to establish priorities for

coastal zone management. An outline and informational work plan is generated by this work item and is followed throughout the Coastal Zone Management Program.

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Inter-governmental Coordination (4.3) insures that the input for this plan is an inclusive effort by all area governmental units and at the same time, minimizes a duplication of efforts.

The next step, (9.1) a Review of existing Federal, State and Local Regulations, provides the program with the necessary background material and a synopsis of proven and disproven methods of coastal zone regulation. The review also provides mandated legal input to include other coastal considerations which reflect upon the local legislation. These first three work items provide the background investigation for the Coastal Zone Management Program.

The next work item (2.1) Inventory of Data Sources, is the initial phase of local plan development. It examines and catalogues the information sources to provide the data base for the steps to follow.

Work Item (7.4) Interim Report on Natural Resource Analysis examines the natural resource potential of not only the Hudson River proper, but also the City of Troy as a coastal zone community. The analytic results generated by this work item determine the actual potential of natural resources within Troy and the physical ability of Coastal Zone land to support development. This determination provides input for (8.11) Identification and Ranking of Developable Areas.

Item 8.11 considers the previously mentioned data and other relevant criteria such as transportation, facilities and services, etc. which might affect future development types. Undeveloped

coastal areas are analyzed for natural capability and services capability and then ranked according to development potential.

Yet, another analytic task which provides input for the final development plan is the Economic Analysis of Potential Development Areas (8.12). This work item complements the above considerations to help define the final Coastal Zone Development Plan (8.13). The Development Plan is the final determination of use which is best suited for the coastal zone developable parcels. The plan, in fact, the analytic focal point for the Coastal Zone Management Program.

A Model Local Coastal Zone Legislation is the final work item (9.2) generated by the Coastal Zone Management Program. This legislation, in ordinance form, insures the proper development of the Troy coastal zone as laid forth in the development plan.

The total Coastal Zone Management Program is, therefore, a logical sequence of events: investigation -- analysis -- implementation, in order to develop Coastal Zone Management legislation for the City of Troy, New York and a model methodology to be considered by other coastal communities as they plan the proper use of their respective natural coastal resources.

City of Troy Coastal Zone Work Program
Work Item 1.2
DEVELOPMENT OF PRELIMINARY GOALS AND OBJECTIVES

Introduction

The City of Troy, as a prelude to its participation in the New York State coastal zone program has prepared preliminary goals and objectives for its local work program. These goals and objectives, though tentative, serve to define the program direction and to demarcate the extent of work element limits.

Several principles must be adhered to in the development of a local program outline. These principles are applicable not only at the program outline level, but are also appropriate at every stage of program development and refinement. The first of these was developed by Ian McHarg. His basic philosophy is that all land is naturally suited for a certain best use. According to McHarg, land can also be put to alternate uses, but careful consideration must be given to the environmental consequences of particular land uses. Hence, the second principle; all decisions must be based on facts with natural resources and natural processes being important considerations. Undeveloped and underdeveloped coastal areas can, after careful analysis, be assigned a best use. Furthermore, upon consideration of contingencies, such as adjacent land use, existing transportation networks, and economics, environmentally compatible land uses can be recommended.

Fragile, scenic and historic areas as well as areas in which natural processes perform work for man should be protected if at all possible.

It is evidenced by representatives of Federal, State and Local legislation that the general public is opposed to the large scale destruction of the landscape. Unfortunately, the general

public is slow to react, in lieu of an organized plan. The initial reaction then must emanate from planning organizations within the affected cities. On the local level, the impetus will be the Coastal Zone Management Plan.

Preliminary Goals and Objectives Statement

In response to the above principles, the City of Troy has developed the following Goals and Objectives. They are designed to guide the work program in a manner that respects environmental considerations while at the same time allowing for orderly development and public access, in consideration of political and economic criteria.

The following definitions will apply throughout the Troy Coastal Zone Management Plan.

Development - land use; may be classified as zero development which is conservation or maximum development of any bulk any density.

Suitability - optimum suggested land use in consideration of natural characteristics and social, economic and political factors also.

Coastal Zone - any land or water area affected by ocean influences or having any affect on an ocean or its influences.

Goal I - To develop the coastal zone such that its values, functions and resources are not impaired or otherwise abused.

Objectives

1. Maximize development where suitable.
2. Discourage development where not suitable.
3. Mitigate negative environmental influences and effects of development.

4. Minimize alterations to the shoreline, in light of environmental factors.
5. Maintain economic and social continuity to sustain viability.

Goal II - to enhance, protect, preserve and restore the coastal resources for this and future generations.

Objectives:

1. Remove negative influences, when necessary to restore coastal resources.
2. Improve the quality of areas of scenic, fragile, unique or historic significance.

Goal III - To promote public use of the opportunities and amenities of the coastal zone.

Objectives:

1. Increase opportunities for public access by easement, acquisition, through Coastal Zone Management plan implementation.
2. Expand the spectrum of possible public uses in the Coastal Zone Management.

Procedural Methodologies

Tasks to be performed in order to effectively meet the goals and objectives will include:

- a. Inventory, map and analyze current land use and interactions of land uses. Special attention should be given to the maximum development criteria of particular uses. Attention shall be given to use characteristics such as population density, building bulk, etc.

- b. A study of Federal, State and local coastal zone regulations (e.g. Federal Flood Insurance) shall be reflected in the land use controls formulated in this study.
- c. Apply conclusions reached in the approved City of Troy Recreation/Open Space Plan and the Housing Plan which may be coordinated within the Coastal Zone Management Plan.
- d. Analyze soils for their construction suitability, depth to bedrock and water table levels. Also, outline the fifty-year floodplain and steep slopes. Catalogue wetlands, unique areas, scenic areas and areas of historic significance.
- e. Apply environmental assessment procedures to projected uses and activities.
- f. Meet with appropriate state, regional and county officials to ascertain goals and objectives at their respective levels. This will be done to insure that goals and objectives developed at all levels are in agreement.
- g. Analyze transportation and utility networks.
- h. Assign uses to each open space area.
- i. Determine demand for coastal resource utilization.
- j. Evaluation the spectrum of possible coastal zone resource uses. Separate uses dependent on the coastal zone.
- k. Recommend appropriate uses for the protection of fragile, unique or historic resources.

1. Develop and refine land use controls to mitigate negative influences while promoting positive ones.

- m. Develop and adopt implementation plan and procedures.

The resultant products of this procedure will outline a step by step methodology for analyzing coastal resources and for applying land use controls and implementation techniques to carry-out Coastal Zone Management planning.

Another aspect of the procedure will generate a locally oriented coastal zone zoning ordinance which should be of future reference value for other communities that desire local Coastal Zone Management plans.

City of Troy Coastal Zone Work Program
Work Item 4.3
INTER-GOVERNMENTAL COORDINATION

DATE: May 23, 1975
PLACE: D.E.C., 50 Wolf Road
AGENCIES: Troy, D.E.C., C.Z. contractors

D.E.C.'s Morrison enumerated his agency's programs and staff members detailed those programs. An attempt was made to relate D.E.C.'s ongoing programs (for which it would receive C.Z. monies) to the Coastal Zone Management Program. The only useful product for Troy was the establishment of a common Coastal Zone Management Program mapping scale at 1:9600.

DATE: June 20, 1975
PLACE: Troy
AGENCIES: Troy, D.E.C.

Conversations with George Elliott of D.E.C. were held concerning the identification of natural resources in and around Troy's coastal areas. Mr. Elliott asked that a request for such information be submitted to him in writing. Then he could officially reply to the request.

DATE: June 24, 1975
PLACE: Troy
AGENCIES: Troy, D.E.C.

The letter requesting State assistance in the identification of natural areas, vegetation and wildlife in proximity to Troy's coastal zone was composed. The information thus supplied is included in Work Items 2.1 and 7.4 and represents the most useful information supplied by D.E.C. It is recommended that all local coastal zone contractors be required to consult with D.E.C. during the data gathering stages.

DATE: July 29, 1975
PLACE: C.D.R.P.C.
AGENCIES: Troy, C.D.R.P.C., T.A.C. representatives

Thyag began by explaining that the purpose of the meeting was to coordinate C.D.R.P.C.'s activities with those of the other local contractors. Staff members then proceeded to explain C.D.R.P.C.'s program progress to date. The relationship of this program to other subcontractors' programs was alluded to in a superficial manner. This meeting seemed to be an attempt to fulfill requirements of inter-governmental coordination but lacked real substance.

DATE: August 5, 1976
PLACE: C.D.R.P.C.
AGENCIES: Troy, C.D.R.P.C.

This meeting was a continuation of the previous meeting. Preliminary Coastal Zone boundaries were discussed. With the exception of agreement on Coastal Zone boundaries, this meeting served no useful purpose. Clearly, guidelines are needed for future coordination.

DATE: September 18, 1975
PALCE C.D.R.P.C.
AGENCIES: Troy, C.D.R.P.C. and other members of the Capital District
Coastal Zone Technical Advisory Committee (T.A.C.)

T.A.C. could be a very useful tool in the coordination of regional coastal zone programs. The structure would necessarily need to be more formal to effective.

Slides of the Capital District Coastal Zone taken from the Hudson River revealed serious local coastal zone land use problems that could not be identified in any other way.

Discussion centered about the Coastal Zone Program. The emphasis of the program is on maximizing proper development where natural processes and resources deemed it appropriate.

DATE: September 25, 1975
PLACE: N.Y.S. Department of State
AGENCIES: Troy, D.O.S.

The subject of this meeting was Troy's first requisition for payment. Minor criticisms ensued and were noted. Troy's program and products generated to this point lack cohesiveness and do not seem to relate to Troy's coastal zone according to D.O.S. officials. State employees seems to be product-oriented. Report guidelines, including format, are badly needed.

DATE: January 7, 1976
PALCE N.Y.S. Department of State
AGENCIES: Troy, D.O.S.

New personnel at D.O.S. are on board. There seems to be another shift in philosophy toward a meaty study. Products are still expected, but are subordinate to content. Criticism again was centered about a lack of cohesiveness. Specific criticisms are forthcoming. Meetings with the lead agency could be most productive if lead agency personnel were permanent, if their philosophies were permanent and if report guidelines were established.

DATE: January 12, 1976
PLACE: Troy
AGENCIES: Troy, D.O.S.

Specific criticisms of Troy's draft reports were received just prior to meeting with State representatives. Agreement concerning final products expected was worked out. Although the meeting was strained, it was most productive in view of the fact that concrete guidelines were now available to guide development of the report. Again, D.O.S. reviewers could not relate the study to Troy's coastal zone and commented that work item write-ups did not maintain a sense of continuity. Clearly, guidelines for written reports should have been developed at the program's outset.

DATE: Janaury 30, 1976
PLACE: Troy
AGENCIES: Troy, D.O.S.

As a result of specific D.O.S. criticisms, revised work items were submitted for perusal. Final mapping examples were also submitted for review by D.O.S. A useful product is finally emerging as a result of consistent guidelines.

City of Troy Coastal Zone Work Program

Work Item 2.1

INVENTORY OF DATA SOURCES

Introduction

Ideally, the designation of the best use of a parcel of land should be based on those natural characteristics and capabilities which determine development suitability. It would be unrealistic, however, to base land use decisions which occur in already developed areas solely on natural parameters. While less noble and often maligned by environmental fervor, the very real influences of economics and politics must also be important considerations.

Historically, economical and political considerations were often the dominant forces in the development of our urban setting. Today, however, legislators have realized the need to preserve and protect our natural heritage even in light of these economic and political forces.

This realization has followed to the local planning level, where in this case, the City of Troy shall design and implement a procedure that does not discount, but must redirect and reorganize all of the development pressures to comprise an optimum Coastal Zone Management Plan.

To proceed with the development of a Coastal Zone Management Plan, it is obvious that we must first identify the apparent development pressures within the City of Troy. These development pressures and forces are best illustrated by analysis of a comprehensive data base dealing with affected areas. The information compiled must include all relevant categories so as not to bias a land use decision as discussed above.

This data base and subsequent analysis will in turn determine the decisions concerning land use within the City of Troy Coastal Zone.

Realizing this, Troy's first step involved compilation of relevant research material which included U.S. census data and information generated and published by C.D.R.P.C. and now defunct O.P.S. In addition, research completed by groups and individuals nationwide was borrowed by Troy for inclusion into its data base. Some locally generated material was also utilized. It is critically important to develop an inclusive and relevant data base. This attention to detail will help insure completeness and relevance of the land use plan and zoning document to be developed.

Two basic categories of information resulted. They were: the natural conditions, and man-made characteristics. The natural category embraces such natural conditions as flood plains; unique, fragile and scenic areas; slopes and soil characteristics. Man-made influences include existing land use, population characteristics, transportation systems and utility corridors. In totality, they serve to separate potentially developable areas from undevelopable ones.

Where possible, maps were produced using these data sources. Each map will be explained below in terms of its genesis, usefulness and importance in the scheme of development of the Troy Coastal Zone Management Plan. Additionally, the extrapolation of map information as a decision tool will be discussed as a conclusion to this work item.

Existing Land Use Map

The key to future land-use decisions rests in a detailed analysis of existing land uses. This land-use information, gathered for inclusion in Troy's coastal zone work program, re-

sulted from building by building, parcel by parcel street surveys by Bureau of Planning and Community Development (B.P.C.D.) staff persons. Field information was number-coded, supplemented with property descriptions to resolve use categorization problems should they arise. Data was then color coded and placed on prints of N.Y.S.D.O.T. maps of Troy. A map scale of 1:9600 was found to be most workable for Troy. However, all information was remapped at 1:24,000 scale in order to preserve continuity of statewide mapping. Copies of the 1:24,000 maps are included with this report.

During the course of map development, several problems had to be resolved. The five major categories of land uses (residential, commercial, industrial, institutional and open space) needed to be subcategorized so as to be inclusive, definitive and manageable. This procedure involved defining categories according to the use included within each. A list of categories and uses contained in each can be found in Appendix 1, attached. The Existing Land Use Map (E.L.U.M.) is Map 1 of the attached series of maps.

Development of Troy has followed a pattern shared by many other older communities found in the eastern portion of the United States. Initial development took place in the Hudson River floodplain but has been spreading slowly but steadily toward the east and north along the plateau above the floodplain. Water transportation and railroads played early roles in the growth of Troy. Now, the highway system has replaced railroads and waterways in influencing Troy's growth. This factor will be discussed in more detail in the analysis of the Transportation Map.

Existing land-use trends are toward home ownership, single-family homes and suburbanization. According to Bollens and Schmandt in their book, The Metropolis, the desire for better living conditions such as better schools, open space and higher quality housing provides the impetus for what they call the "moving ethos."

Housing quality in the core area of Troy and in the immediate neighborhoods is generally poor. There are isolated exceptions. Some areas require redevelopment (demolition, extensive remodeling, etc.) while others require remedial action (code enforcement, etc.)

Commercial development has occurred in modes which have had a tendency to spread in one direction. This strip pattern has served to completely redefine neighborhoods. It has also impacted on the viability of adjacent uses. Suburban shopping centers have probably been the major cause of boarded-up commercial buildings in Troy. Figures compiled by C.D.R.P.C. indicate that each commercial acre of land in Troy was worth \$460,000 in 1970 and paid \$80,000 in wages.

Mapped land use data will be reworked so as to identify concentrations of related land uses. The positive and negative values of each will be weighted, so as to develop a realistic and workable land use plan for Troy's Coastal Zone.

Coastal Zone Boundary

Demarcation of a preliminary Coastal Zone boundary for mapping purposes was arbitrarily accomplished. It was generally agreed that the Coastal Zone should include the 100-year floodplain of the Hudson River. Hard data related to the Hudson's

100-year flood level is incomplete because of several factors, the more important of which was the relatively short span of time for which Hudson River flood records have been kept and the number of "improvements" made to its banks.

However, records are available for accurately determining the 50-year floodplain. According to the Bureau of Planning and Community Development calculations, the 50-year flood level at Troy is about 32 feet above mean water level. Assuming that the 100-year flood level is 15% higher than the 50-year level, the 100-year flood level of the Hudson River is about 37 feet above the mean water level.

It was also agreed that the area above the eastern bluffs of Troy would not be expected to have a significant influence on the character of the Hudson River floodplain in Troy. Thus, the bottom of the variously steep bluffs was considered for preliminary study to be the Coastal Zone boundary in Troy.

Floodplains Map

Prior to delineating the preliminary Coastal Zone boundary in Troy, the Hudson River floodplain in Troy was mapped. Additionally, the floodplains of the Poesten Kill and the Wynanst Kill were mapped since they are tributaries of the Hudson.

As were explained previously, the 100-year Hudson River floodplain cannot be mapped with certainty due to insufficient data. However, the Bureau of Planning and Community Development was able to map the 50-year floodplains of the Hudson River, the Wynants Kill and the Poesten Kill. Data for mapping purposes came from two sources: U.S.G.S. hydrological information and from the U.S. Army Corps of Engineers.

Floodplain data will be compared to open spaces in the

floodplain and Coastal Zone as well as Federal Flood Insurance requirements and the economic and social requirements of Troy. Wherever possible under these constraints, development will be avoided. It is interesting to note that the annual flood damage in Troy exceeds \$64,000 calculated in 1954 prices.

Topography

Slope information was calculated from topographic data taken from N.Y.S.D.O.T. topographic maps of Troy. Three categories of slope were identified according to the degree of engineering difficulties they impose. These categories are 0-15%, 15-25% and greater than 25%.

Erosion is a dynamic process that is continually changing the landscape. It is intensified by slopes and is aided mainly by water. Soils that are stable when on a level become unstable when on a slope. For these reasons slopes exceeding 15% should not be developed. This is especially true in areas with hydrological problems such as a high water table.

The Soil Conservation Service recommends that no development occur on slopes exceeding 15%. Most responsible government and private engineers, including world-reknown land-use planner, Ian McHarg, have adopted a similar 12% to 15% maximum developable slope.

Although there are no slope problems in the Coastal Zone, there are some very steep slopes leading to the plateau to the east of the coastal zone. These slopes are indicated since they do border Troy's preliminary Coastal Zone and may later be found to have an influence on it. Whenever possible, slopes will be excluded from consideration for development.

Soils Map

Soils information was collected from several sources. A soils map was prepared from information provided as a result of aerial photo-mapping by the Rensselaer County Soil and Water Conservation District. Classifications of Troy's soils and descriptions of them were compared to other soils classifications in order to insure validity and completeness of the Rensselaer County project product (See map). Based on its bearing strength, water table height, depth to bedrock and other physical properties each soil was assigned to a category of maximum development suitability within the Coastal Zone Management Program.

Unique Areas Map

For the purposes of this study, the term "unique areas" will encompass areas and resources with fragile, unique or irreplaceable characteristics and areas with scenic views or historical significance. Much work has already been done by many groups on the subject of historic resources of Troy. Most of the historic resources data were supplied by the Rensselaer County Historical Society and the Mohawk and Hudson Industrial Gateway. Some data were resulted from Bureau of Planning and Community Development research.

There are many scenic as well as historic areas found in Troy's coastal zone. Scenic areas and areas of fragile nature or irreplaceable value were determined as a result of Bureau of Planning and Community Development research. Most of these areas were found to be located outside of Troy's coastal zone. Some resources though were located on the Hudson's shoreline. The lack of environmental resources in Troy is attributable to two factors: the concrete mooring walls that

altered Troy's Hudson River shoreline and the density of development that occurred adjacent to these mooring walls and along the rest of the Hudson River floodplain. Over a period of decades, the remainder of the shoreline has been altered numerous times so that very little of it remains in a natural state.

The New York State Department of Environmental Conservation has advised Troy's Bureau of Planning and Community Development that there are no environmentally significant resources along Troy's Hudson River shoreline. This is probably due to the alterations made to the shoreline as discussed above. D.E.C. has also advised Troy that in addition to the lack of fish spawning beds and estuaries, etc., along the Hudson River, it is also unlikely that Troy's two largest streams, the Poesten Kill and the Wynants Kill, serve as fish spawning areas for migrating fish species. This is due to the spectacular waterfalls along both streams in Troy. A single 90-foot high waterfall drops the Poesten Kill from the high plateau area to the floodplain level. These waterfalls act as barriers to upstream fish migrations. Suitable waterflow habitats (nesting, nursery and resting areas) are found in Troy on the plateau above the Hudson River floodplain. Each unique area will be considered in the Coastal Zone Management Plan.

Population Density Map

This map cannot be considered the ultimate social indicator. It does not indicate sex, race, religious or educational variables of a human population. It is statistically insignificant. But when viewed in concert with other social indicators, it becomes an amplifier of potential social problems. For example,

if a high population density were to be congruous with a low-income concentration, there would be reason to suspect the adequacy of services in that area.

Residential densities in Troy have been found by C.D.R.P.C. to be about average for the three urban centers (Albany, Schenectady and Troy) of the Capital District. In agreement with the Bureau of Planning and Community Development findings, C.D.R.P.C. also determined that population densities decreased as distance from the urban cores increased.

Density information was calculated from Federal census material. Five categories of population density for analysis purposes evolved. They are: 0 to 9.9, 10.0 to 19.9, 20.0 to 39.9, 40.0 to 99.9 and 100.0 to 199.9 persons per acre.

Population densities indicate development pressure and as such will aid in determining development needs for the City of Troy.

Transportation Systems Map

Data for the purpose of mapping transportation corridors and street usage conditions was gathered from many sources. Interviews were conducted with traffic engineers that were cognizant of Troy's conditions and problems. Much data was provided by studies developed at the county, regional and national levels. However, most data was generated locally. The system was analyzed in terms of negative impacts on residential quality and the needs and desirability of development in the coastal zone.

Troy, like other American Cities, still bears the imprint of this historic growth from core to radial to suburban development. The unique physical characteristics of the city, a narrow flat land between the river to the west and a high brace of

hills to the east, present many circulation problems for the City. These restrictions force traffic to use a very limited number of north-south streets in the downtown area, the control core of commercial and high density residential. A limited number of east-west streets traverse the high hills to the east while there are only five bridge connections across the Hudson. The present street system (basically a rigid grid pattern overlayed against the irregular contours of the river bank and the hillside) results in many acute "Y" angled intersections creating traffic conflict. Troy's transportation circulation is also hampered by narrow streets, lack of signal synchronization, poorly designed intersections, lack of off-street parking and poor regulation observance.

Differing land uses have differing transportation requirements. Some uses require broad streets that are clear of trees for trunk traffic while others are better served by narrower streets, many trees and wide sidewalks. In planning for the regulation of uses within the Coastal Zone, it is advantageous to understand the existing system, its deficiencies and future requirements in the context of land uses and their long-term needs, costs and benefits as well as their environmental impacts.

Utilities Corridor Map

Water and sewer utility data were provided by the City of Troy Department of Public Utilities while gas, electric and telephone data were provided by Niagara Mohawk Power Corp. and N.Y. Telephone Company via a C.D.R.P.C. utilities study.

The City of Troy has developed one of the finest water supply and treatment facilities in the region. Existing facilities are generally sound and the maintenance capabilities

are good. There are, however, sizeable undeveloped areas of Troy that have no currently available water supply. It is expected that deficiencies in transmission and treatment capacities of the system will result from development of these large areas. None of the large developable tracts are located in Troy's coastal zone.

Sewer lines in Troy are comprised of about 100 miles of sewer pipe. Most of the existing sewer lines discharge into the Hudson River although there is some discharge and overflow in both the Wynants Kill and the Poesten Kill. Some outfalls are submerged and are consequently restricted by blockage. The general condition of the sewer system is good although many man-holes were in need of repair or reconstruction. The capabilities of the main trunk sewers and their locations are such that they can be extended to serve certain areas in the City which will need sewer service in the future. A major sewage treatment plant is being constructed in North Greenbush. When completed in 1976, all of Troy's sewage will receive secondary treatment.

Capital District Regional Planning Commission has reported as a result of a survey, that there is no foreseeable need for additional electrical generation facilities in the Troy area and especially in Troy's coastal zone. Developed areas of the City are generally well served by the local gas, electric and telephone systems. Future land requirements in the Coastal Zone will be for such uses as relay stations, towers and support facilities. Some areas of Troy are not served by the utilities, but extensions of existing facilities are quite feasible. The only exceptions are new gas hook-ups and

the South Troy industrial area. The existing utilities would require major up-grading while hook-ups would be restricted by the "so called" natural gas shortages.

All utilities should be analyzed according to the restrictions they impose on future development. Utilities data are important for determining future development capabilities in the light of the costs to the City of providing and maintaining those utilities. The question to be answered is, "Will the taxes generated by development meet the costs of providing the utilities and services required by the development.

Water Quality

The recommended classifications for the surface waters of the Hudson River, Poesten Kill and Wynants Kill in the immediate area of interest are "C". The classification is based on the results of sample analysis and pollution source investigations.

Studies prepared by the Water Resources Commission for the New York State Department of Health recommend a "C" classification for that part of the Hudson River between the Mohawk River and the southern boundary of Rensselaer County.

A "C" classification implies that the water cannot be used as a water supply source for drinking, food processing or contact-recreation, such as bathing. However, the water is suitable for fishing and activities such as agriculture, industrial cooling and transportation.

The water quality of both the Hudson River and the two streams is expected to improve as a result of new waste treatment policies that require treatment of domestic and industrial wastes before discharge into the River.

Table 3.9 identifies the best usage for each water classification.

Table 3.9
WATER CLASSIFICATION AND USAGE

Class	Best Usage*
AA & A	Water Supply
B	Bathing and Recreation
C	Fishing
D	Agriculture and Cooling
E	Sewage and Wastes/Transport
F	Sewage and Waste Disposal

*"Best Usage" expresses the usage of the water requiring the highest level of quality standards and considered to be in the best public interest.

Climate

Climatological data has been gathered by the National Oceanic and Atmospheric Administration (NOAA), located at Albany Airport. NOAA compiled thirty-three year summaries (1941 to 1974) of temperatures, temperature extremes, precipitation, wind and degree days. All tables which follow were extracted from NOAA data.

The climate of Troy, including the Capital District, is primarily continental in character, but is moderated by the maritime climate that prevails in the extreme southeastern portion of New York State. This moderating effect is more pronounced during the warmer months; in winter months, maritime influence is off-set by outbursts of cold air that sweep down from Canada.

The area enjoys a rather extensive growing season for northern latitudes. On the average, the growing season reaches or exceeds 160 days.

Temperatures

As a rule, temperatures throughout the year fall rapidly after sunset, making nights relatively cool. Winters are usually cold and occasionally severe. The maximum temperatures during colder winter months often fail to rise above freezing and night time lows frequently drop below 10°. Tables 3.3 and 3.4 summarize temperatures from 1941-1974 and 1965-1974 respectively.

Table 3.3
MEAN TEMPERATURES (°F)

Mean Daily Max.	-----58.1
Mean Daily Min.	-----37.1
Average Mean Daily	-----46.6

Table 3.4
TEMPERATURE EXTREMES (°F)

Highest Recorded Temperature	-----98
Lowest Recorded Temperature	-----m28

Precipitation

Snow falls frequently during the cold months. Frost depth penetrates to 4 feet; on the average, a depth of about 3 feet can be expected. A considerable portion of spring and summer rainfall results from showers associated with thunder storms. Hail is not usually of any consequence. Annual precipitation is usually sufficient for the needs of the region and only occasionally do periods of drought threaten. Table 3.5 provides a thirty-three year summary of precipitation accumulations.

Table 3.5
PRECIPITATION-WATER

Mean Max. Monthly-----7.43"
Mean Min. Monthly-----0.72"
Average Mean Monthly-----2.78"

Wind

In general, wind velocities are moderate. The north-south Hudson River Valley has a moderating effect on wind severity. Eight months of the year (May through December) are dominated by southerly winds; the other four months (January through April) are dominated by northwesterly winds. The mean wind velocity (monthly) as measured from 1941 to 1974 is 8.8 miles per hours. Destructive winds occur infrequently and tornadoes are rare in Troy and the adjacent tri-county area of Albany, Rensselaer and Schenectady. Since 1826, only six tornadoes were reported.

Degree Days

Degree days are based on deviations from a base temperature of 65°. A daily average temperature of 55°, for example, would equal 10 degree days. A daily average temperature of 60° would equal 5 degree days. Summaries of this data indicate the annual total degree days requiring heating (deviations below 65°) and the number of days requiring cooling (deviations above 75°). Table 3.6 summarizes mean monthly degree days for heating over a thirty-three year period.

Table 3.6
DEGREE DAYS (Base 65°F)

Mean Heating per month-----574
(for thirty-three year period)

Inversions

Troy commonly experiences surface or radiational inversions. This type of inversion, which is characteristic of New England, occurs at least 50% of the total time in a one year period. Surface inversions occur on clear, windless nights. They differ in character during the summer, fall and winter (spring is included in the summer). Burn off of an inversion layer can take anywhere from 1 to 4 hours depending upon seasonal climatic variables.

During the summer, the inversion layers are 200 to 300 meters in depth. The inversion sets-up between 10:00 and 11:00 P.M. and reaches its maximum depth at sunrise. Summer inversions burn off 1 to 3 hours after sunrise.

Surface inversions occur more frequently in the fall than at any other time of the year because of the large number of clear, calm nights. The depth of fall inversion layers ranges from 200 to 400 meters. Inversions set up 1 to 2 hours after sunset, reaching their maximum depth at sunrise. Burn off time ranges from 2 to 3½ hours after sunrise.

During the winter, the depth of the surface inversion layer ranges from 300 to 500 meters with a maximum depth at sunrise. Burn off occurs 3 to 4½ hours after sunrise.

Conclusion

The previous discussion of each category of information and data source provides the basic outline for decisions dealing with the Coastal Zone Management Plan. As mentioned in the introduction, each category will be a factor affecting the land use within the Coastal Zone. The extrapolation and analysis of this information, whether in map form or in text, will be undertaken in Work Item 8.13, the development plan.

Table 1 provides a summary of the information previously discussed and its significance for the subsequent Coastal Zone Management Plan.

TABLE I
Factors Affecting Land Use and their Significance

Considerations	Significance
Soils	--compressive strength and specific gravity affect ability to support heavy loads, therefore, determining maximum building mass. --chemical properties affect plant nutrition, in conjunction with climate variables it determines agricultural potential. --porosity and permeability relate to drainage, water table level and water storage which also influence drainage. In conjunction with slope, erosion becomes a problem if slopes are oversteepened by man-induced undercutting.
Bedrock	--bedding planes and fracture patterns affect ability to support heavy loads, therefore, determining maximum building mass. --depth to bedrock determines whether construction is possible and determines allowable types of construction. --porosity and permeability - water percolating through rock creates hydrostatic pressure, buoyancy and excess weight, thereby, increasing the potential for failure and movement of the rocks.
Climate	--seasonal temperature and precipitation variations determine growing season and recreation potential.
Slope	--steepness influence soil and bedrock stability - slopes in excess of 15% are usually considered critical - all soils stable on level surfaces may lose the ability to support development when on slopes.
Wetlands	--function as water storage areas allowing natural processes to slowly and harmlessly dissipate large volumes of water.
Water Quality	--animal and plant species require water for maintenance of biologic functions --water is a focal point for recreation, agriculture and development - unpolluted water is attractive to recreationists and farmers; navigable waters are advantageous to industry.
Wildlife and Vegetation	--the amount and diversity of vegetation and wildlife is an indication of the natural biological productivity of an area. Diversity in plant physiogomy is a requisite for animal diversification.
Adjacent Land uses	--although existing land uses may not represent wise land use, some effort should be made to ensure that proposed uses do not conflict with existing uses.
Traffic	--land uses generate different volumes and types of traffic. Dangerous pollutants, such as lead, carbon monoxide, nitrous oxides and hydrocarbons are an environmental health problem. --continuous traffic noise is a health problem. --time of day affects social disruption.
Utilities	--availability of water, sewer, electric and gas lines is a development consideration. Bedrock depth could make the costs of utility availability astronomical. Certain soils could negate the use of septic tanks.

City of Troy Coastal Zone Work Program
Work Item 7.4
NATURAL RESOURCES ANALYSIS

Analytic Considerations

All land is better suited for some purposes than for others. McHarg has shown that all land has an inherent best use and it can be more economical to follow environmental dictates than to misuse land because it is cheaper or closer to employment centers. Open space is necessary to the physical, mental and psychological health of humans. It can be used for recreation, conservation and for aesthetic and health amenities. Conservation lands should include all lands and wetlands exhibiting irreplaceable resources or are fragile in nature. Development continues to despoil what is beautiful and natural and only marginally developable. The majority of land is inherently developable; only a small percentage is not.

Conditions which reduce the developability of certain lands can be placed into five categories. They are: slope, soils, bedrock, hydrology and unique areas.

Erosion is a dynamic process that is continually changing the landscape. It is intensified by slopes and is aided mainly by water. Soils that are stable when on a level become unstable when on a slope. For these reasons, slopes exceeding 15% should not be developed. This is especially true in areas with hydrological problems such as a high water table.

The Soil Conservation Service also recommends that no development occur on slopes exceeding 15%. Most responsible government and private engineers, including world-reknown land-use planner, Ian McHarg, have adopted a similiar 12% to 15% maximum developable slope.

The identification of soils is yet another important indicator of an undeveloped parcel's inherent support capability. Some soils

are naturally fertile while others are not. It all boils down to the fact that every soil type is best suited for certain purposes. If soils are abused by being used for purposes for which they are not suited, unforeseen problems can arise.

I. Municipal Responsibility

Not all land can be economically developed. Special considerations are necessary for land situations involving adverse economic, as well as environmental conditions. Coastal areas implying adverse environmental conditions include high productivity areas and fragile areas such as marshes and other wetlands. Economically undevelopable coastal zone areas on the other hand, are typified by steep slope, poor drainage or bedrock near the surface. In examining these areas, city government has a responsibility to:

- a. inform and protect its citizens from dangerous or costly development,
- b. provide its citizens with a pleasant and healthful, natural and social environment,
- c. protect itself from litigation resulting from not protecting its citizens from costly development and natural catastrophies,
- d. exercise stewardship in the use of coastal resources.

II. The Environmental Philosophy

Ian McHarg, the world reknowned land-use planner and environmentalist, is convinced that a "best use" can be defined for all land. His "best use" recommendation is predicted on detailed analysis of all natural and man-made characteristics of a parcel of

land and its surroundings. Natural parameters such as slope, topography, soils, biology, hydrology and man-made characteristics such as utilities, adjacent land uses and traffic are considered when determining best use. This does not mean to imply that the utilization of land should be restricted to its best use only. Rather, based on all available data, land can be put to alternate uses with few economic, social and environmental consequences.

McHarg's ideas are being increasingly accepted by land-use planners and by local and regional administrators. It makes sense to them to properly use land resources. Proper use of land resources insures future availability of land suitable for specific needs. And, he has shown that proper use of land is less costly in the long run. Land use controls such as the zoning ordinance, subdivision regulations, site plan reviews and others have been used for 60 years in order to insure a comprehensive plan of development and proper use of land resources. They have been designed to consider the general welfare above other considerations. There is also the question of economics. Land use controls help stabilize property values and protect the local government for exorbitant maintenance and service costs.

Open space serves many functions. It is used for recreation, for conservation and as breathing space. In the words of McHarg,

"Clearly the problem of man and nature is not one of providing a decorate background for human play or even ameliorating the grim city: it is the necessity of sustaining nature as a source

of life, milieu, teacher, sanctum,
challenge and most of all, of re-
discovering nature's corollary of
the unknown in the self, the source
of meaning."¹

For urban dwellers, there must be contact with nature. Man has evolved over a period of nearly two-million years in a natural environment. The modern metropolis and megapolis with walls of asphalt, aluminum and stainless steel isolate man from his natural heritage of cool, green landscape and softly whispering breezes. It is no wonder that a study completed in 1964 discovered that 20% of the people living and working in Manhattan were psychologically indistinguishable from the average inmate of a mental institution.² On a less sensational level, it is noteworthy that several studies have shown that crime increases as population density increases. Perhaps a solution to this quandry is provision of natural, open spaces in densely populated areas. The coastal zone is ideally suited for this purpose because it is located near heavily populated areas and because it should not be developed until it is inventoried.

According to Charles E. Little, there are three functions of open space; they are recreation, conservation and amenity.³ The population booms in Troy during the last quarter of the 19th. century and again after World War II caused the wholesale development of large tracts of land for housing with no attention paid to environ-

1. McHarg, Ian, Design with Nature, Museum of Natural History, The Natural History Press, 1969, p.197.

2. Ibid. p.20.

3. Little, Charles E. Challenge of the Land, Open Space Action Institute, New York, 1968, p.9.

mental and open space needs. Houses, commercial establishments and industries were placed in areas that were most easily developed. Floodplains, in particular, are one example of easily developed land. Open space was relegated to narrow, steep sloped areas and areas too wet or costly to develop. These types of land are ideally suited for conservation. But, open space should not be limited to lands not suitable for development. Conservation lands should include all lands exhibiting irreplaceable resources or are fragile in nature.

Wetlands and other environmentally sensitive areas in the coastal zone represent a situation which is not conducive to development. Wetlands are defined as lands above or below water which may be permanently, temporarily or intermittently covered with fresh or salt water. These sites are commonly referred to as marshes, swamps or bogs and estuaries. Some living things are absolutely dependent on the habitats found in these areas. They are ecologically fragile and sensitive to human intrusion. Some living things are absolutely dependent on the habitats furnished by marshes. Normally, even after a wetland has been drained, it is undevelopable. The mud on its bottom which has accumulated over a period of years, must be removed and fill must be brought in. The stream or river which drained into the wetland must then be diverted or otherwise confined so that the land thus made cannot be eroded. All of this work is costly.

On the other hand, proper land uses of these areas in the first place could prove less costly over the short, as well as long term. While the initial price of a wetland might be less than a more developmentally suitable parcel of property, the pre-

paration costs in most cases are more. Then, the long-term costs of keeping the wetland drained, halting erosion and compensating for increased flooding caused by removal of the wetland as a water storage reservoir, must be included in the developer's costs. All in all, it could be a very expensive operation. Perhaps this is why wetlands are losing their development appeal. (Nearly one-half of the State's wetlands have already been destroyed by developers.)

As this wetland exploitation continues, a bill⁴ is being considered in the New York State Legislature that will place all of the freshwater wetlands in New York State whether privately or publicly owned, under the jurisdiction of the Department of Environmental Conservation. Formerly, only salt-water wetlands were protected in New York State. A permit system would then be implemented to regulate the uses to which freshwater wetlands could be put. As a result, Troy would be required to develop regulations for the proper use of its wetlands that reflect the Department of Environmental Conservation's recommendations.

Associated with wetlands are floodplains. Most of Troy's coastal zone is Hudson River floodplain. Development in the floodplains of streams and rivers is dangerous because life and property are in danger of flood damage. Witness the damage done by Hurricane Agnes in the western portion of the State.

Each year, damage totalling hundreds of millions of dollars is caused to property in floodplains. In response to this situation, the Federal government has developed two programs. The first is the Coastal Zone Program administered by NOAA. It is the purpose

4. Freshwater Wetlands Bill - Senate 1644, Assembly 2045.

of this Program to determine complementary uses for the New York State Coastal Zone including the Hudson River floodplain. The second program is the National Flood Insurance Program. Designed to alleviate financial suffering, the Federal Government defrays a large portion of the premiums necessary to insure residential, commercial or industrial property against flood damage. Building codes and zoning and subdivision regulations which reflect flood insurance regulations are required of communities located in areas classified as flood-prone. Furthermore, the insurance is mandatory on property for which a federally insured mortgage has been secured or on property for which financing has been made available from a federally insured lending institution.

There are also consequences for non-compliance against a community which decides not to apply for flood insurance. (It cannot receive federal aid for new projects such as park development if it does not wish to submit to Federal flood insurance regulations.) Troy has been accepted into the program.

Troy is not accepted from floods damages. It is true that Troy rarely floods. This is, in part, due to the fact that much of the natural Hudson River floodplain in Troy has been raised by filling and has been separated from the River by the mooring walls constructed adjacent to the River. For these reasons, flooding of the Hudson in Troy occurs less often and as a result, engenders a false sense of security. Actually, if flooding damages in Troy were figured on a yearly basis, they would amount to 64 thousand dollars per year at 1954 prices.⁵

5. O'Neil, Col., John T., Flood Control of Hudson River Tributaries in Rensselaer County, New York, U.S. Army Corps of Engineers, New York, p.44.

In order to protect environmental resources from exploitation, potential property owners and developers from financial and physical losses, and itself from lawsuits, the City of Troy is considering environmentally fragile areas and financially, physically or environmentally undevelopable areas in the preparation of a model coastal zone zoning ordinance. A purely environmental approach will be taken in assigning a category of development suitability to each undeveloped area in the coastal zone. Then, based on costs, needs, benefits and other contingencies of each suggested use, a land-use plan will be developed. In some cases, the final land-use recommendation may well be conservation or open space. As a next step, land-use regulations will be formulated to guide development in undeveloped coastal zone areas in a manner that protects unique and fragile environmental areas as well as historic and scenic resources. In this way, land-use decisions can be financially, socially and environmentally sound at one time,

It is becoming more evident each day that the general public is opposed to the large-scale destruction of the landscape. Even the uninitiated are beginning to comprehend the significance of Man's interactions with the environment. They are observing catastrophies caused in part by Man's penchant for developing those areas not suited for development. However, they also notice the cleaner waters and purer air resulting from sound environmental programs. No matter how outraged the public is, two things keep them from voicing disapproval. One involves the financial aspect. Often remedies are expensive; while ignoring the same environmental problems makes, or at least, saves money. As soon the remedy to an environmental problem becomes profitable, that problem will

cease to exist. The other reason is that the general public is to react. Even when humans attempt to conserve, they tend to dominate rather than preserve.

In the realm of land use problems and their solutions, the philosophy of restricting growth through zoning is gaining acceptance. These controls are principally in the field of environmental protection. Court decisions in several states have looked favorably upon restrictive land use regulations which preserve ecologically sensitive areas including floodplains and wetlands.⁶ Several important State Supreme Court decisions have upheld very restrictive land-use regulations intended to protect environmentally sensitive areas. They have occurred in California, Wisconsin and Maine. In all cases, the courts upheld the validity of protective zoning as reasonable under the police power concept. In addition, compensation to owners was not required. Furthermore, the courts point out, it is the unreasonable demands placed on the environment in relation to its tolerance which are the targets on protective zoning. The Maine Legislature has declared that preservation or protection of environmentally valuable areas is superior to owner's rights in the use of his land.⁷ The courts have also found that when development cannot be supported by the soil, topography and/or drainage conditions, large lot zoning may not be only permissible, but also practical. Federal agencies are finding land use studies important. HUD is now requiring a land use element in addition to a housing element in 701 programs.

6. Agricultural Retention: An emerging Issue, Environmental Comment, Urban Land Institute, p.12.

7. Ibid. p.13.

Of course, it may be argued that neither the New York State Legislature nor the Courts in New York State have very sanctioned environmental, agricultural or large lot zoning for purely environmental considerations. As a matter of fact, such zoning in urban and suburban fringe areas such as those surrounding Troy or within Troy is likely to meet with resistance and may be questioned by the courts. However, the proverbial foot is in the door.

As the first step in this direction, the City of Troy Bureau of Planning and Community Development has prepared an Environmental Assessment Procedure by which proposed programs will be evaluated as to their environmental impact and value.

III. Developmental Constraints

Most often soil problems are induced not by the physical properties of the soil, but by moisture contained in the soil and its location on steep slopes. Usually, moisture and slope work concurrently to make a soil unmanageable. Soil problems ordinarily take the form of erosion and failure. Erosion is defined as the downslope movement of unconsolidated sediments (soils) whereas failure is the abrupt decrease in the strength of a soil. Both are aided, if not induced by water.

Soil is made up of several sized particles of eroded and weathered (chemically broken down) rock. Particles range in size from boulders several feet in diameter through cobbles, gravels, sands, silts to clays which are .0002 inches in diameter. All have differing erosion characteristics. Water usually moves faster through a sandy soil than through clay soil because of the size of the pores. Although clay soils can be shown to have greater total pore space, the pore spaces are smaller allowing capillary action to restrict the flow of water. Water trapped in pore

spaces produces the lubricating effect which causes failure of clay soils. They abruptly change from a solid containing water to a semi-solid mud. Since water cannot be compressed, it acts like grease in the confined pore spaces of clays. Certain clay soils shrink significantly on drying and expand when moistened. They alternate shrinking and swelling has been known to displace, crack and even ruin foundations.

Bedrock is an effective development criteria as well. Bedding planes and fracture patterns affect ability to support heavy loads, therefore, determining maximum building mass. The depth to bedrock determines whether construction is possible and the allowable type of construction. The porosity and permeability of bedrock - water percolating through rock creates hydrostatic pressure, buoyancy and excess weight, thereby, increasing the potential for failure and movement of the rocks. As often as not, these conditions work in concert with one another. Soil problems are evidenced most often by this erosion and failure. Unique historic or sensitive areas should be protected from erosion induced by development in consideration of these factors.

Wetlands such as marshes and ponds are ecologically fragile, and therefore, are sensitive to human intrusion. Some living things are absolutely dependent on the habitats found in these areas. Normally, even after a wetland is drained for development, many additional, costly operations are necessary to prepare the soil for development. Often this involves excavation and filling with sound material.

Flood damage resulting from development in the floodplain is a constant problem. In Troy, flood damage averages \$64,000 per

year at 1954 prices. Two federal programs, the Coastal Zone Program and the Federal Flood Insurance Program have been proposed to help design a coordinated development approach to the coastal zone and to alleviate the financial burdens imposed by the flood insurance premiums and from direct flood losses.

Slope, soils information (including depth to bedrock) and hydrologic information were gathered and placed on mylar transparencies. Each soil type will be placed into a development capability category when analysis of the mapped data is completed. It is upon the basis of this information and other material generated during this study that future zoning decisions will be made.

Recent court decisions in California, Wisconsin and Maine have upheld the concept that the public good takes preference above individual rights. These decisions have allowed confiscatory powers with no compensation. It should be pointed out that these decisions concerned rural areas and would, in all probability, be questioned if applied to Troy and its surroundings. However, there is a need for marked improvement in the way in which land is used in Troy and the way which environmental concerns are treated by developers and City officials.

Troy's coastal zone is characterized by the absence of significant natural coastal zone resources. Troy lacks marshes, mud flats, estuaries and other valuable and ecologically sensitive areas. Fish species present in the Hudson near Troy include shad, alewives and striped bass. For the past two years,

striped bass sport-fisherman have not only been catching 30-inch striped bass at Troy, but have also been eating them. As the Hudson continues to cleanse itself, it can be expected that sport-fishing for stripers and herring will become even more popular.

The Hudson River in the Troy area serves as a resting and feeding area for small flocks of migrating waterfowl. There are nesting sites on the western shore of the Hudson as well as the eastern shore of Center Island.

Unfortunately, most of the streams flowing through the City of Troy into the Hudson River have some sort of fish barriers on them which prevent the passage of migrating fish upstream to spawning areas. The Wynants Kill has a series of falls or rapids just below the dam at Burdens Pond.

The same is true of the Poesten Kill below Ida Lake. For years, the downstream sections of these streams have been the recipients of various quantities and types of pollution from many sources. With pollution abatement moving forward, these streams are making a comeback. However, the natural and man-made barriers still exist and must be considered in the development of a City of Troy Coastal Zone Management Plan.

City of Troy Coastal Zone Work Program
Work Item 9.1
REVIEW OF EXISTING REGULATIONS

Floodplain Management

Since 1960, the Corps of Engineers has been authorized to prepare floodplain information reports upon request by state and local governments. These reports delineate the floodplain areas and provide general guidance in the use of floodplains.

Requests for floodplain information reports are submitted to the designated State agency for the legislative body or any other designated official body of the community. The State agency in turn, transmits a copy of the request, together with a supplemental request by the State, to the Corps of Engineers. The State agency designates priority within the State. The Corps then determines whether or not it is able to provide assistance.

Title XIII

National Flood Insurance (HUD Act of 1968) (Public Law 90-448)

To obtain flood insurance coverage, a community must submit a complete application which meets all the requirements of the regulations governing the program.

Actuarial premiums are calculated. The community property owners are required to pay an affordable premium, while the Federal government picks-up the tab for the remainder of the premium. In return, the Federal government requires the local government to develop adequate permanent land use and control measures for areas having special flood hazards. It charges the individual property owners with the duty to adopt these control and use measures in return for the reduced premiums. These measures include:

1. Encourage only that development which represents acceptable social and economic uses of the flood prone areas in relation to the hazards involved and should discourage all other development. Zoning subdivision, building and health regulations should be designed to develop the wisest use of these areas compatible with flood risks.
2. Areas most frequently flooded might be reserved for open space uses - allowable buildings shall take into account first floor elevations and use.
3. Fringe areas might permit all uses provided floors above safe elevation and proper anchoring of structures.
4. Coastal zone areas should consider floor elevations and need for bulkheads, seawalls and pilings.

The local government must then implement the adopted land use and control measures.

Adoption of the program has absolutely no effect on eligibility for disaster relief for immediate necessities that accompany catastrophies.

Some planning and implementation aid has been made available from State governments and the Federal government although no clearly defined

responsibility has been established. Taxing power of the community remains the major resource.

Applications must be made to the Federal Insurance Administrator. Communities provide:

1. A statement of its corporate and geographic existence, including maps identifying its flood-prone areas, along with a brief summary of the community's flooding history and evidence of compliance with the minimum requirements for initial acceptance into the program checklist.
2. Detailed assurance of future compliance with the land use and control criteria and the planning and development regulations. This requires a legislative resolution and the designation of an agency or an official with the responsibility and resources to carry out all commitments.

Required Land Use and Control Measures for Mudslide Areas

The Administrator is obligated to supply the necessary data. The local government may use such data as may be available to it initially but the Administrator may at some later date provide final data which shall take precedent over locally generated data.

- I. When the Administrator has determined that a community is subject to mudslides, but has not yet identified any area within the community which has a special mudslide hazard,
 - A. Require the issuance of a permit for any excavation, grading, fill or construction in the community.
 - B. Require review of each permit application to determine whether the proposed site and improvements will be reasonably safe from mudslides and will
 1. be adequately protected against mudslide damage.
 2. not aggravate the existing hazard.
- II. When the administrator has delineated the mudslide areas having special mudslide hazards
 - A. Must meet requirements of I above plus
 - B. Must adopt and enforce sections 7001-7006 and 7008-7015 of the 1970 Uniform Building Code published by:

International Conference of Building Officials
50 South Los Robles
Pasadena, California 91101

Pre-requisites for the sale of flood insurance

In order for the City of Troy to apply for Federal Flood Insurance, it must first submit a Resolution (see attached sample) to the Administrator of the Federal Insurance Administration.

Accompanying the Resolution, the following should be submitted:

1. citations and copies of State and Local Laws authorizing regulatory land use actions.
2. a summary of State and local, public and private floodplain or mudslide area management measures.
3. a large scale, reproducible map of the City identifying floodplain and mudslide areas and naming bodies of water which cause floods.
4. a brief summary of the City's flooding and mudslide histories - characteristics of floodplains (a current floodplain information report by the Corps of Engineers will suffice.)

5. estimates relating to flood-prone areas concerning population, number of one to four family residences and number of small businesses.
6. address at which floodplain map and hazardous areas map is available for public inspection.
7. a copy of the land use control measures the City has adopted to meet the Administrators guidelines.
8. a commitment by the City to recognize and evaluate flood and mudslide hazards in all official actions relating to land use.
9. a commitment to delineate limits of areas having special hazards on local maps of sufficient scale to identify locations of building sites.
10. a commitment to provide any information concerning uses and occupancy of flood or mudslide hazard areas as the Administrator may request.
11. a commitment to maintain for public inspection and furnish upon request information on elevations of the lowest floors (relative to mean sea level) of new or substantially improved structures included in the hazard areas - information regarding presence of basements and the distance between the first floor and the bottom of the lowest opening through which water may enter shall also be available.
12. a commitment to cooperate with other levels of government and private firms in the location of flood and mudslide areas and in the management of flood and mudslide area.
13. legislative appointment of an official or an agency as local program overseer.
14. legislative designation of an official to submit an annual report to the Administrator at
Federal Insurance Administrator
Dept. of Housing & Urban Development
451 Seventh Street, S.W.
Washington, D.C. 20410

Criteria for land management and use (minimum requirements)

- I. When the Administrator has not defined special flood hazard areas in the community and has not supplied other pertinent data,
 - A. require building permits for all proposed construction or other improvements in the community.

B. review all building permit applications for new construction or substantial improvements - buildings located in the flood hazard zone must have:

1. anti-flotation anchorage designed into structure to prevent flotation, collapse or lateral movement.
2. construction materials and utility equipment which are resistant to flood damage.
3. construction methods that will minimize flood damage.

C. review development proposals to assure that

1. the proposals are consistent with the need to minimize flood damage.
2. all public utilities and facilities be located, elevated and constructed to minimize flood damage.
3. adequate drainage be provided so as to reduce exposure to flood hazards.

D. design water and sewage systems such that during times of flooding, flood waters and drinking water and sanitary sewerage do not contaminate one another.

II. When the Administrator has identified the floodplain area having special flood hazards, but has not identified the floodway nor the coastal high hazard area,

A. take into account floodplain management programs in effect in neighboring areas.

B. provide that laws and ordinances concerning land use and flood loss reduction take precedent over other conflicting laws and ordinances for the floodplain.

C. review building permit applications for major repairs within the floodplain area having special flood hazards to determine that the proposed repair,

1. uses construction materials and equipment that are resistant to flood damage.
2. uses construction methods and practices that will minimize flood damage.

D. review building permit applications for new construction or substantial improvements within the flood hazard area for,

1. protection against flood damage.
2. design against flotation, collapse or lateral movement of the structure.

Beginning of record displayed.

OLUC ti "CITY OF TROY COASTAL ZONE MANAGEMENT PLAN"

Record 1 of 1

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► 7 260 [Albany, N.Y. : #b New York State Dept. of State, #c 1976] 1

► 8 300 1 v. (various foliations) : #b maps ; #c 29 cm. 1

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► 10 500 "The preparation of this document was financially aided through

a Federal grant from the Office of Coastal Zone Management, National Oceanic

and Atmospheric Administration under the Coastal Zone Management Act of 1972.

... for the Department of State." 1

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Record 1 of 1

HELD BY NO@ - NO OTHER HOLDINGS

- ▶ 11 504 Includes bibliographical references. 1
- ▶ 12 650 0 Coastal zone management #z New York (State) #z Troy. 1
- ▶ 13 710 1 New York (State). #b Dept. of State. 1
- ▶ 14 710 2 National Ocean Survey. #b Office of Coastal Zone Management. 1

3. use of construction materials and utility equipment resistant to flood damage.
4. use of construction techniques which minimize flood damage.

E. review subdivision proposals and other proposed new developments to assure that,

1. all proposals are consistent with the need to minimize flood damage.
2. all public utilities and facilities are located or elevated or constructed to minimize or eliminate flood damage.
3. adequate drainage be provided so as to reduce exposure to flood conditions.

F. design water and sanitary sewerage such that during times of flooding flood waters and drinking water and sanitary sewerage do not contaminate one another.

III. When the Administrator has identified the floodplain area having special flood hazards and has provided water surface elevations for the 100 year floodplain but has not supplied identification of the floodway or coastal high hazard area.

- A. meet standards of II plus.
- B. require new construction or substantial improvements of residential structures to have lowest floor level at same elevation as the 100 year floodplain (includes basement)
- C. require new non-residential construction or substantial improvement thereof to place lowest floor at or above the level of the 100 year floodplain and to floodproof utilities and sanitary facilities up to the level of the 100 year floodplain.
- D. until the floodway has been designated, an applicant for use of the floodplain must demonstrate that his use combined with existing and anticipated uses will not alter the 100 year flood level by more than one foot.

IV. When the Administrator has identified the floodplain area having special flood hazards, has provided water surface elevation data for the 100 year floodplain, and has provided floodway data, land use and control measures must

- A. meet requirements of II plus.
- B. require new construction or substantial improvements of residential structures within the flood hazard to have the lowest floor elevated to or above the 100 year flood level.
- C. require new construction or substantial improvements of non-residential structures to have the lowest floor including basement at or above the 100 year flood level or to have lowest floor and utilities and sanitary facilities flood-proofed up to the level of the 100 year flood level.

- D. designate a floodway for passage of water of the 100 year flood level.
 - E. provide that existing non-conforming uses within the designated floodway shall not be expanded but may be modified, altered or repaired to incorporate flood proofing measures as long as these measures do not result in a rise of 1 foot in the 100 year flood level.
 - F. prohibit fill or encroachment within the designated floodway which would impair the movement of the 100 year flood
- V. When the Administrator has identified the coastal floodplain, the coastal high hazard area and the 100 year flood level
- A. meet the requirements of II, plus
 - B. have the level of the bottom floor including basement at or above the 100 year flood level in all new or substantially improved residential structures within the hazard area.
 - C. require all new or substantially improved non-residential structures within the hazard area to have the first floor including basement be at or above the level of the 100 year flood, or require the building, utilities and sanitary facilities to be floodproofed to the level of the one hundred year flood.
 - D. provide that existing uses located on land below the elevation of the 100 year flood level in the coastal high hazard area shall not be expanded.
 - E. provide that no land below the level of the 100 year flood in a coastal high hazard area may be developed unless the new construction or substantial improvement
 - 1. is located landward of the reach of mean high tide.
 - 2. has a first floor level at or above the level of the 100 year flood.
 - 3. has no basement and has the space below the lowest floor free of obstructions.

Assessment

The National Flood Insurance Program in intent, closely parallels the N.Y.S. Coastal Zone Management Program. It legislates adherence to a prescribed land use management program for the area within the HUD designated 100-year floodplain. Of course, there are subtle but meaningful differences. As written, the law allows (as it should) for little, if any, circumvention of requirements. It is realistic and provides for extenuations (e.g. Troy's case of C.B.D. partially in floodplain). However, mapping is inaccurate and greatly behind schedule hampering the effectiveness of the program. As a first effort, the program is sound. In fact, although the programs effectiveness may not be visible for many years, it will most certainly have a significant effect on development in floodplains and the form of municipalities.

Freshwater Wetlands Act

Article 24 of DEC Law

All individual freshwater wetlands 12.4 acres in size are to be included on the N.Y.S. freshwater wetlands map and in the freshwater wetlands inventory. They are included for the following reasons:

1. They are valuable resources for flood protection, wildlife habitat, open space and water resources.
2. Considerable state freshwater wetlands have been lost, dispoiled or impaired by draining, dredging, filling, excavating, building and pollution. Other wetlands are in jeopardy.
3. Recurrent flooding aggravated or caused by the loss of freshwater wetlands has serious effects upon natural ecosystems.
4. Wetlands in one region are affected by acts on rivers, streams and wetlands of other regions.
5. Natural systems affecting freshwater wetlands overlap many localities. One locality alone lacks adequate jurisdiction to protect itself from misuse or neglect of adjacent localities.
6. Loss of freshwater wetlands deprives the people of the state of the following benefits:
 - a. flood control
 - b. wildlife habitat
 - c. watershed protection
 - d. open space
 - e. recreation
 - f. erosion control
 - g. education
 - h. nursery grounds

At the discretion of the Commissioner, freshwater wetlands smaller than 12.4 acres could be included in the inventory and mapping. However, this inclusion would be subject to review by the Freshwater Wetland Appeals Board. Maps may be prepared on a regional basis. Upon completion, tentative maps go to local public hearings. Owners of lands under consideration for inclusion as well as the local chief administrative officer are to receive written notice of hearings. Maps and public notices are also to be made available.

Local Implementation

Each local government may adopt a freshwater wetlands law or ordinance. It shall be applicable to all freshwater wetlands within its jurisdiction and shall be adopted by September 1, 1976. Implementation of the law or ordinance must follow the formal filing of the applicable map.

If the most local governing body fails to enact the appropriate protective legislation, responsibility reverts to the control of the county. The county has 90 days in which to exercise authority. Failing to do so, responsibility reverts to New York State.

Regulations shall be subject to public hearings. Within 30 days of adoption, D.E.C. will be notified in writing.

Regulations

Activities for which a permit is required include any form of:

- draining
- dredging
- excavation
- removal of soil, mud or gravel
- dumping
- filling
- erecting structures
- roadway construction
- pile driving
- placing obstructions, and/or pollution or sewage discharge.

These activities are to be included into a locally developed law or ordinance. They are subject to regulations (whether or not they occur upon the wetland itself), if they impinge upon or otherwise substantially affect the wetland. However, no regulation shall apply to any area more than 100 feet from the wetland.

Program

Cities, towns, villages or counties may enter into cooperative agreements with D.E.C. for the purpose of preserving and maintaining them in their natural state or enhancing them through the furnishing of personnel and money.

Land Use Regs.

The Commissioner shall determine the best use for each wetland and shall prepare minimum land use regulations. They are to be submitted to local governments. Within six months of receipt, the legislative body of each affected local government shall submit proposed regulations to the Commissioner for review. Where local regulations do not meet the minimum State regulations accompanying supportive materials must be submitted by the local legislative body. The Commissioner shall, after considering all material, make a finding of minimum compliance. If locally prepared, land use legislation is found to be unacceptable, then D.E.C. shall frame land use regulations governing local wetlands.

Freshwater Wetlands Appeals Board

The duty of the five-member Appeals Board is to hear appeals by any party affected by this law. Review is limited to:

- a. conformity with State and Federal Constitutions.
- b. determining local jurisdiction
- c. appropriateness of evidence
- d. arbitrariness

Judicial appeals may be made prior to Appeals Board Review.

Enforcement

Violations of Article 24 are punishable by:

Civil Sanctions - \$3,000 per violation and restoration of the wetland-brought by Attorney General.

Criminal Sanctions - \$500. to \$1,000 first offense \$1,000 to \$2,000. plus 15 to 182 days for each subsequent offense - each day is a separate offense.

Any offender may be required to repair the damaged wetland in lieu of fine or imprisonment.

Assessment

A badly-needed law, the N.Y.S. Freshwater Wetlands Act, suffers from similar mapping ills as the Flood Insurance Act. Requests for wetlands determinations as well as demarcation of boundaries are creating a backlog of work for D.E.C. At the same time, D.E.C. is attempting to systematically map all freshwater wetlands in the State.

For Troy's coastal zone, in particular, this act has no relevance. There are certain to be legal challenges in regards to the "taking" issue. Regulations are sufficiently strict so as to protect most wetlands from despoilation while at the same time, are responsive to landowners rights.

Conclusions:

For many communities, all of the above regulations apply. However, in Troy's case (see work item 7.4) of no naturally fragile, irreplaceable, irretrievable resources (notably wetlands) in the coastal zone some of the regulations will not apply. Regulations pertaining to freshwater wetlands are in this category. On the other hand, Federal Flood Insurance requirements will be integrally interwoven into (work item 9.2) the model zoning legislation. Setbacks, uses and height requirements of the F.F.I. will be reflected in Troy's model legislation. In most cases, F.F.I. requirements will be the development guide. Below is a list of the main points of the Flood Insurance Program. Following that is an outline of flood insurance program application to Troy's coastal zone program.

1. Program is privately operated, but federally subsidized.
2. It provides low cost insurance for property owners whose local governments have signed up.
3. Flood prone communities not participating by July, 1975, will be denied all forms of federal aid for new projects (park development, sewage treatment construction and the building of new federal buildings.)
4. Once a government applies, individual property owners are responsible for purchasing individual low cost insurance.
5. Cost is 25 cents for \$100 coverage up to \$35,000 for single-family homes - contents of residence are insured at 35 cents per \$100. coverage up to \$10,000 maximum - cost for other kinds of residences is also low, but maximum coverage increases to \$100,000 for the structure and \$10,000 for the contents.
6. Non-residential property is covered at 40 cents per \$100 on structures and 75 cents per \$100 coverage on contents to a maximum \$100,000.
7. Local governments must have building permit system.

Flood Protection can be accomplished by a judicious mixture of

1. flood control works - dams, levees, etc.
2. land use controls-zoning
3. limitation of municipal capital expenditures
4. public acquisition - development rights

Two zoning districts are recommended by O.P.S.

1. floodway zone - land frequently flooded
2. floodway fringe - land between floodway and 100-year floodplain boundary .

Special Permits - make reference to special permits in the floodway zone and floodway fringe zones descriptions. Includes:

- a. procedural standards
 1. who issues permits
 2. application procedure
 3. public hearings
- b. substantive standards

Zoning boundaries must be capable of precise location.

--Definition Section

--Use zones must contain

- a. purpose
- b. delineation
- c. permitted uses
- d. special uses
- e. setbacks and yard require
- f. special provisions
 1. habitability
 2. flood proofing

--Special Use Permits

- a. purpose
- b. authority
 1. by whom granted
 2. special provisions
- c. application
 1. to who filed
 2. descriptive requirments
 3. filing fee
- d. standards

--Public Hearings

--Appeals

--Notification of Action

City of Troy Coastal Zone Work Program
Work Item 8.11
IDENTIFICATION AND RANKING OF DEVELOPABLE AREAS

Introduction

The purpose of this work item is two-fold. In the first place, it is designed to identify those areas in the local coastal zone which are undeveloped. Then on the basis of natural parameters and man-induced characteristics, parcels of land presently undeveloped can be ranked according to their development suitability. Units of analysis are one-acre "cells" of land.

It is significant to mention that Troy's central business district (CBD) was not included in this study. This occurred for several reasons, most important of which are that plans are being finalized for that area and any suggested changes in those plans would be very politically unpopular.

The reader should bear in mind that the thrust of coastal zone management is toward identifying coastal resources and uses that harm them and then maximizing appropriate development where practical. Conservation is a strong influence. Coastal land resources of great natural social value are to be protected. Only then is appropriate development maximized.

I. The Process

In order to synthesize and analyze base data, it was necessary to develop a series of maps. This was accomplished in stages with each map's development being dependent upon previous ones. First, a separation of developed and undeveloped land areas in Troy's coastal zone was effected. This was accomplished by outlining all of Troy's undeveloped coastal land areas (as identified on Troy's Land Use map developed in work item 2.1) on a reproducible overlay.

Next, natural factors influencing developability were mapped and coded according to their development capabilities. The highest rating went to the areas that were capable of being mostly intensively developed. One-acre cells were designated as part of this step. With the exception of those areas with extraordinary geometric confines square one-acre cells were drawn. In many cases, geometrics of cells were influenced by the geometrics of the natural capability boundaries.

Another map was produced concurrent to the natural capability map. It examined the local street system and upon the basis of prescribed definitions categorized all of Troy's streets. Each street type was assigned a rating with the highest rating going to major routes. All one-acre cells were then analyzed in terms of their proximity (access) to the rated streets. Again, values were assigned with the highest value going to one-acre cells having direct access to major routes.

Two additional optional maps may be developed in this step. In Troy's case, they were inappropriate although they could be relevant to other communities. One involved the mapping of mass transportation routes while the other involved mapping major utility lines. Troy's mapping indicated no significant variations within the above categories throughout Troy's coastal zone area. Therefore, these two maps were not ranked and were not included in the final stage of this work item.

Finally, the already ranked map of natural development capability and the already ranked street system map were overlaid and the individual rankings combined additively. Another map was thus produced to reflect this combination. Each individual one-acre cell reflected a total development capability ranking that extended

over the range of zero (least conducive) to ten (most conducive). This rating reflected both man-induced and natural parameters. Then, based on the findings, a listing of characteristics and recommended representative development types was produced. These can be found in Table I of this work item.

II. Map Development

Separation of developed land from undeveloped land is a relatively simple task. It involves the tracing of undeveloped areas as identified on the Land Use Map produced in work item 2.1 on an overlay. Undeveloped areas are defined for the purposes of this work item as land areas upon which there are no improvements and/or which are unused and/or which are presently unimproved but are used as open space. Examples of undeveloped land are open space areas used for recreation, but are not improved and vacant, unused land. Examples of developed land are land with vacant structures, land which is unimproved but serves a use purpose and improved land whether paved or with a structures or structures on it.

As has been stated above, the second step in determining the capability of land to support development necessitates analysis of a host of natural-environmental factors. Slope, bedrock, soils, water table, drainage, wetlands, fauna and flora are included in this category. Each of these considerations in some way limits the developability of land. Otherwise stable soils become unstable on critical slopes; poor drainage and high water tables compound slope and soil limitations increasing the susceptibility of failure while decreasing developability. (See work item 7.4 for a more detailed description of the significant of these factors.) All considerations mapped in this work item

should be coded and categorized according to some criteria. In this study, the criteria are the difficulties afforded development by the considerations. For example, flowing and standing water and 25% or greater water can be assigned one category while the 100-year floodplain and 15%-25% slope areas are assigned to another.

On the basis of all of the natural-environmental characteristics, a maximum development suitability was assigned to each undeveloped acre of land in the coastal zone. This point cannot be stressed enough; a maximum development suitability category can be assigned to any parcel of land and the designation is based on the natural characteristics and capability of the land. It indicates only that certain undeveloped areas of Troy's coastal zone fell into one of four maximum developability categories. Each category represents a general development case which considers bulk as well as density of development and depends on certain natural conditions as outlined in Table I. A multitude of particular development situations fit each category. Although an area may be determined to be suitable for development, it does not follow that it must be developed. However, mapping of the developability of undeveloped coastal zone property will be patterned after the following four maximum developability categories:

- 1 - development of any bulk, any density (towers, factories)
- 2 - housing of any density (row houses, townhouses),
 limited to 4 floors
- 3 - low-density, single-family housing
- 4 - conservation

An explanation of each category is in order. The first category (development of any bulk any density) includes industrial

and commercial buildings, warehouses, housing and high-rise office or apartment buildings. In other words, there are no natural developmental restrictions: the major restriction is dependent on fire codes and the firefighting capability of the local fire department. It should be recognized that the categories do roughly approximate maximum developability and in Troy's opinion represent the best and most innovative methodology available for determining best land use. Its only purpose is for estimating the development capability or suitability of land so that it is not exceeded.

The second and third categories require little explanation. Category two (housing of any density) includes townhouses, row houses and apartment houses of four floors (or stories) maximum and single-family homes. Category three is limited to low-density, single-family detached houses on 1/5 to 1/2 acre lots.

Depending on the circumstances, limited development could be allowed in the conservation category, but only after the developer has made a strong case for development. It should also be allowed when the economic and social need is beyond question. In no case, however, should development of any type be allowed on or near marshes, estuaries, tidal flats, spawning beds or any ecologically fragile or irreplaceable resources as well as on steep slopes. A more detailed description of allowable and recommended uses can be found in Troy's work item 8.13, the Coastal Zone Development Plan. The four maximum suitability development types outlined above represent realistic, practical examples of types of development recently proposed and expected to be proposed in the future in Troy.

The McHargian philosophy and methodology referred to in Item 7.4 also considers man-induced characteristics when determining the developability of land. For this reason, additional information including utilities (sewer, water, natural gas, electricity and telephone) public transportation and the existing local street network was gathered and mapped and then analyzed according to the constraints imposed on various development types by these considerations.

During the course of the analysis, it was determined that there are a few areas in Troy, some small, some rather extensive, that are lacking in utilities (i.e. gas, electricity, water, sewers, etc.) and mass transportation capability. However, there are none of these areas in Troy's coastal zone area. Therefore, since utilities and mass transportation are not limiting factors in Troy's analysis, they will not be discussed and graded, nor will they be entered into the ranking system.

A factor that does help determine the developability of undeveloped land is the proximity of access roads and their capability. Access requirements vary by development type. Single-family detached residences require minimum street widths of 30 feet since this type of residence usually provides ample off-street parking space and, therefore, cars are not normally parked on the street. Little explanation is needed for the reader to understand that industrial and commercial uses, especially supermarkets and department stores require major thoroughfares to attract consumers and for transportation of goods. The need for wider streets in order to facilitate the movement of truck traffic and the unloading of trucks is obvious.

Another map was produced which categorizes Troy's streets into three categories: local, collector and major. Several attempts were made to classify Troy's streets before an acceptable one was found. Production of a street classification map (Transportation System Map) is a purely local undertaking. A 40-foot wide street in City A may be used as a major street, while in City B its use is a local street and, therefore, must be classified that way.

The transportation System Map classifies each street in Troy in terms of its function. Major routes are simple to define; they are roads that are assigned a route number whether state or otherwise. They often traverse the City of Troy in one or more directions and function to move traffic to and through Troy. Local streets, at the other extreme, usually function to carry only traffic intended for those particular streets. They are usually, but not always residential streets and the narrowest of streets. Collector streets function to funnel traffic from local streets to major routes. In many cases, collector streets are but local streets with a heavy and varied traffic use.

Access and its importance have already been discussed. The reader has seen that some uses are absolutely dependent on location on or near major routes or at least heavily travelled roads.

As a result, access to undeveloped parcels of land was graded according to the distance to a street and according to the capacity and design of the street. The ranking for mapping followed the pattern below.

0 - no street access, no adjacent acre area with access.

- 1 - access to local street, adjacent acre square with access to collector street.
- 2 - access to collector street, adjacent acre square with access to major street.
- 3 - access to collector street.
- 4 - access to major street.

Overall development potential for each undeveloped acre cell in Troy's coastal zone reduced to a concurrent consideration of natural resources and the local street system. As a result, the third and final map for this step was developed. It was arrived at by combining an analysis and ranking of natural resources additively with an analysis and ranking of the local street system to result in a general development potential map which shows by color coding a range of eleven levels of developability (See Table I).

The last step involves matching development types (i.e. single-family detached housing, neighborhood commercial, etc.) with the eleven developability classifications.

III. Map Analysis

Based strictly on natural parameters, the majority of undeveloped cells in Troy's coastal zone are characterized by having very little development potential or unlimited development potential. Very few areas with limited developability exist in the coastal zone. Bordering the coastal zone are undeveloped areas exhibiting varying degrees of developability.

The basic restrictions on development in Troy's coastal zone are critical slope, bedrock at or near the surface, or flooding and drainage problems. Of these, slope is the most often encountered. Bordering the coastal zone restrictions on development

change to soils of high clay content on excessive slope.

Adding man-induced characteristics further refines and often limits the range of development possibilities. Access to major streets is a hinderance to residential development while at the same time is a necessity to commercial development. In Troy's case, the parcels which are most conducive to highest intensity development tended, contrary to what was expected, to very slightly favor the Hudson River side of Troy's coastal zone. As capability of land reduced slightly, the shift reversed to favor the upland side of the coastal zone. Then, as lowest capabilities were examined, they tended again to reverse location and favor the River side.

An attempt was then made to apply the constraints on development to the local situation in order to devise a listing of representative development types that would fit the eleven developability categories developed above. Resulting is the listing found in the third column of Table I.

The authors feel that the theory behind the analysis and products developed in this task is basically sound. Application is rather limited in already heavily-developed areas for obvious reasons of economics and politics. This process would be more useful to undeveloped coastal zone areas in which the administrator is not concerned with a multitude of extraneous variables.

However, there is one major breakdown. The division of undeveloped coastal zone areas into one-acre cells for analysis is invalid for Troy's case and probably for any similar analysis conducted in a developed area with a rigid street system. An alternative suggested by the authors is to not utilize the one-acre grid unit of analysis that is the major cause of arbitrariness

in this study. Rather, each undeveloped area should be analyzed in its totality. Changes in developability would, in this way, result in less arbitrariness.

Designation of desired land use will result from analysis of existing land use, social and economic trends, as well as analysis of Federal and State regulations, policies and needs. Finally, a cost-benefit analysis will be completed for undeveloped areas of the coastal zone. Each development type whether residential, commercial or industrial will be analyzed to determine its benefit, if any, to the taxpayers of the City of Troy and to Troy's economic and social well-being. Only after all of this information has been investigated and compiled, will the Coastal Zone Development Plan unfold.

TABLE I (8.11)

GENERAL CHARACTERISTICS

RECOMMENDED USES

CODE #	DEPTH TO BEDROCK	SLOPE %	NATURAL				ACCESS						
			FLOODING	DRAINAGE	WATER TABLE	SOIL	MAJOR		COLLECTOR		LOCAL		
							D	I	D	I	D	I	
0	20"	>15	FREQUENT	POOR	HIGH	CLAY							AGRICULTURE, OPEN SPACE, PARKING RECREATION, CEMETERIES
1	20"	>15	FREQUENT	POOR	HIGH	CLAY					X		SAME AS "0" ABOVE
2	20"	8-15	FREQUENT	POOR	SEASONAL TO HIGH	CLAY							SAME AS "0" ABOVE AND LARGE LOT (>1a) RESIDENTIAL
3	20"	8-15	FREQUENT	POOR	SEASONAL TO HIGH	CLAY					X		SAME AS "2" ABOVE
4	20-48"	3-15	FREQUENT TO PERIODIC	POOR TO FAIR	SEASONAL TO HIGH	CLAY TO LOAM	X	X			X		SAME AS "2" ABOVE BUT WITH 1/2 TO 1 ACRE LOTS
5	>48"	3-15	PERIODIC	FAIR	SEASONAL	CLAY SUBSTRATUM			X				RECREATION, RESIDENTIAL (2 1/2a) LOTS
6	>48"	0-15	PERIODIC TO OCCASIONAL	FAIR TO GOOD	SEASONAL	CLAY SUBSTRATUM TO GRAVEL SURFACE	X	X			X		RECREATION, RESIDENTIAL (4-FLOOR MAX.) LIMITED COMMERCIAL
7	>48"	0-8	PERIODIC	GOOD TO RAPID	SEASONAL TO LOW	LOAM TO GRAVEL			X	X			RESIDENTIAL (4-FLOOR MAX.), INSTITUTIONAL, COMMERCIAL, WAREHOUSING, PROFESSIONAL OFFICES (NO TOWERS)
8	>48"	0-8	PERIODIC	GOOD TO RAPID	SEASONAL TO LOW	LOAM TO GRAVEL	X			X	X		SAME AS "6" ABOVE AND HIGH-PERFORMANCE INDUSTRIAL
9	>48"	0-3	INFREQUENT	RAPID	LOW	GRAVEL			X				ANYTHING
10	>48"	0-3	INFREQUENT	RAPID	LOW	GRAVEL	X						ANYTHING

City of Troy Coastal Zone Work Program
Work Item 8.12
ECONOMIC ANALYSIS

INTRODUCTION

Justification for projects must be based, at least in part, on the economic impacts they engender. In the past, public officials have operated on the assumption that "industry is good" and "single-family housing is bad" for the local tax base, hence economy. Unfortunately, many bureaucrats had few, if any facts on which to base this judgment. It is not universally acceptable to simply say "industry is good" while "single-family housing is bad." What the argument reduces to is a definition of terms and a development of a methodology by which economic considerations may be analyzed.

The purpose of this work task (8.12) is to develop a general methodology for determining revenues and costs resulting for different types of development. In doing so, terms will be defined. It is hoped that this methodology can be easily adapted to various real situations.

Analysis is based first and foremost on a sound data base. Sources of information for Troy's study will be identified and footnoted where applicable. In most cases, data were fathered from Federal census material and from local studies and budgets. Where information didn't exist or was costly and time consuming to determine, authoritative standards were utilized. These also will be identified and footnoted.

Assumptions were necessitated in many instances due to lack of data in particular areas of concern. Local peculiarities can oftentimes render tested standards useless. For instance, standards of density for industrial employees often breakdown when local industries deviate substantially from the national industrial norm. Any assumptions made in this study

will be identified and the reasoning behind them discussed.

Some mention should be made of the results of this task. There was in this case, and should be in every case, no conscious effort to weight either the revenues or the costs determined in the analysis. Cost benefit analysis are habitually manipulated to reflect the wills of the analysts. They are usually synonymous with justification. This occurrence can be observed at all government levels and within virtually all departments, bureaus and agencies at those levels. For cost-benefit analysis to be viable there must be a commitment on the part of the analysts to make them as unbiased as possible. Having various personnel perform prescribed, isolated computations eliminates much subjectivity on the part of the analysts. Another suggestion that should be implemented is to attempt to apply the same level of sophistication to each category of municipal and education service analyzed.

It has been estimated that a "complete" cost-benefit analysis for Troy's coastal zone would take 8 months utilizing a dozen people, a computer and several thousand dollars. A more practical approach consists of isolating major costs and revenues. The lack of preciseness in the resultant revenue-cost ratio is of minor significance because the ratios (results) are understood to represent relative indicators. This approach, while imperfect, is much more reasonable and valid than no cost-benefit analysis or a deliberately biased analysis. At any rate, only major contributing costs and revenues should be utilized by the great majority of municipalities. Also, benefits such as clean air, pure water and quiet, which are difficult to quantify, should be avoided.

The resulting ratio of revenues divided by costs ($\frac{R}{C} = T$) reflects relative degrees of justifiability of projects. If $T = 1.00$, for example, it may be assumed that the project under consideration is a "break even" project in terms of this study's methodology and set of conditions. It should not be construed to mean that the project would break even economically over the long or short terms; there are just too many variables that cannot be considered. Nor should it be construed that a project with $T = .75$ will in all cases operate at a deficit or a $T = 1.75$ will always operate at a benefit. However, $T = 1.75$ is reasonably expected to be more beneficial than $T = .75$. All the T quantity shows is relative versus cost ratios.

Revenue versus cost analysis can be catagorized in numerous ways. For the purposes of this study, costs and revenues were determined independently and were catagorized as follows: mun-

icipal costs and revenues were separated from school costs and revenues and were further subdivided into public safety, public works and recreation. School costs and revenues have been estimated by weighing the averages of Troy's two school districts. (Note: for a more detailed description, see Schools Methodology below.)

All results are reported in terms of dollars per acre by development type. To illustrate, medium-density residential development costs, the City of Troy \$2,186. dollars per acre for sanitation, police and fire protection, recreation, etc. However, tax revenues of \$5,032 dollars per acre are generated by medium-density residential development. Carrying this process one step further, the Revenue value in dollars per acre can be divided by the cost value in dollars per acre resulting in the T (revenue-cost) ratio. This T ratio is 2.30 and the proposed development for which the T was calculated would probably be financially beneficial to the City.

Six development types were isolated from a multitude of possibilities. The six are low-density residential, median-density residential, high-density residential, commercial, warehousing and manufacturing. Similar development types might be used by other local governments, whereas other municipalities may find radically dissimilar categories more useful for their purposes. To a large extent, Troy's categories were shaped by the format of the available data although the foremost consideration is the types of development expected to be proposed. The authors desired for example, to ascertain the relative sales and sales tax revenue contributions to the local economy. However, sales and sales tax receipts were not reported by type.

Therefore, property tax revenues and expenditures for municipal services to commercial properties had to reflect those of an average commercial type.

Earlier local communities were advised to consider only the major revenues and costs involved in completing a revenue-versus cost analysis. Besides the obvious savings in time, effort and finances, there is a more practical reason: as costs and revenues become more "refined", they less realistically reflect actual costs and revenues. Some classic examples of this occurrence are the revenue amount associated with reducing smog, or the societal costs incurred as the result of tree removal. How are those quantities estimated? It is the authors' contention that they cannot be accurately estimated. Furthermore, they are based, in some cases, almost entirely on a series of assumptions. This doesn't say much for the validity of any cost-revenue analysis that considers minor, undocumented revenues and costs.

One additional suggestion should be made at this point. No community undertaking a cost-revenue analysis should make the error of completely patterning its analysis after that of another community. Rather, several analyses should be researched and then a methodology which reflects one or more of the analyses should be adopted by the community. Studies recommended by the City of Troy are: The Costs of Sprawl by the Real Estate Research Corporation (on sale at the U.S. Government Printing Office), the Fiscal Impact of Residential and Commercial Development: A Case Study by Muller and Dawson and Barton-Aschman Associates',

The Barrington, Illinois Area; A Cost-Revenue Analysis of Land-Use Alternatives. There are several other studies with merit, but the three mentioned above are in the authors' opinions the best. Others will be noted in the bibliography at the back of this section. In any event, the methodology developed during this study is designed to be general enough to be adaptable by most communities with minor modification.

Typology of Development

Categorization of development types is influenced for the most part by the format of the available data. The best example of this occurrence is the "lumping" of commercial uses into one category since Troy's sales tax revenues were reported without being broken down by type. Originally, the authors attempted to present the findings in a detailed manner, but because of the format of the data, among other things, this was not practical.

Reasonable future development categories for Troy had to reflect recent trends and characteristics of those trends. Three classes of residential development, representing realistic population densities and building types, were decided upon. Local governments utilizing some variation of this cost-revenue analysis are cautioned that the development categories used in this study should not be construed to be indicative of development characteristics everywhere. Local governments, therefore, are encouraged to produce their own particular varieties of development for analysis. These development types should (1) be characteristic of local, recent development trends and (2) exhibit recent, realistic population density trends of the locality.

In like manner, commercial and industrial development types researched and expected in the future had to be reasonable. Outside of the Central Business District in Troy, two commercial types can be expected in the future. They are the neighborhood commercial basically satisfying the everyday needs of the neighborhood, and community commercial which satisfied the weekly or monthly needs of several neighborhoods.

Industrial land uses can be divided in almost any conceivable way. Again, in Troy's case, categorization was dependent upon data format. As a result, the breakdown in Troy followed the pattern of manufacturing and warehousing. Therefore, the six development types used by Troy in this task are:

Definitions

- A. Low density residential - characterized by one-family detached homes. Typical building densities are 1.71 housing units per acre. The associated population density is 4.85 persons per acre. A certain amount of residential land is lost to roads, sidewalks, etc., but nonetheless, must be figured into the calculations.
- B. Medium-density residential - characterized by garden apartments, townhouses, apartment house complexes and other walk-up multiple family residences. Typical family units are 23.50 per acre and the typical population density is 35.25 persons per acre. There is a high percentage of single-person (young and old) families residing in this residential type. Another common trait is the low bedroom to dwelling unit ratio.

- C. High density residential - characterized by residential towers of 8+ floors per building and/or public housing and other high bedroom apartment complexes. Typical dwelling unit densities are 18.16 per acre and the associated typical population density is 51.39 persons per acre. Examples of this development type include senior citizen towers and public housing. All extremes of population density are encountered in this case: from single person families to families of 8 or 10 persons.
- D. Commercial - characterized by neighborhood "ma and pa" stores serving nearby residents and small-scale shopping centers featuring a drug store, laundromat chain food market and chain department store. Typical employee density is 26.45 employees per acre based on Troy's 134.92 commercial acres and commercial employees. Commercial employees information was gathered from federal census material. The categories included under commercial employees employment status are retail trade, finance, insurance and real estate and business and repair services.
- E. Warehousing - characterized by furniture and appliance warehouse outlets, automobile sales lots and showrooms, building supply houses and wholesale factory outlets. Typical worker density is 7.57 persons per acre. There are 82.82 acres of wholesale commercial uses and warehouses currently in Troy.
- F. Manufacturing - characterized by clothing, paint and small machinery manufacturing. There is no

representative by heavy industry in this category.

There is no expectation of future heavy industry settling in Troy. The employee density is 54.78 persons per acre and there are 74.52 acres currently in manufacturing use.

Municipal Methodology

Before an explanation of methodology is undertaken, the reader is advised that data gathered and decisions and assumptions made in this section are not applicable to all local situations. There will be disparities induced by local variables, but regardless, Troy's results are valid as will be those of other communities if decisions and assumptions are objectively made.

For the sake of clarity, the methodology discussed in this section will be presented in a series of stages made-up of steps each building on the previous step(s). Assumptions, sources of information and reasoning will be interjected where applicable.

Municipal Budget - itemization of expenditures.

Major municipal expenditures in Troy's 1975 budget can be included in three categories: public safety, public works and recreation. Of the total amount of money expended for those three categories, public safety costs account for 75.2%, while recreation and public works account for 8.3% and 16.5% respectively.

It is important to note that many significant expenditures are not included in this analysis for two reasons. Certain costs do not vary significantly from one development type to

another or their costs are off-set by specific charges or taxes separate from property taxes (e.g. sewer and water rents in Troy are designed to compensate for all capital costs, maintenance costs and operating costs of the Bureau of Water and Sewers.) Local governments are advised to note such local circumstances and disregard them when undertaking a revenue-expenditure analysis.

Costs

Public Safety

Within the City of Troy, municipal police and fire protection requires an approximate expenditure of 5.824 million dollars per year. This figure accounts for approximately 38% of the total City Budget. Therefore, police protection and fire protection for any new development is a significant cost impact to be considered.

Cost Factors

There is an indeterminable number of variables to be considered. Some are evident while others are more extraneous and, therefore, difficult to quantify. To circumvent this problem, Troy decided to calculate public safety costs in the following manner.

Given:

Total 1975 cost for police protection = \$2,648,433.00

Total urbanized acres = 4,766.72

Cost per acre = 555.61

Cost per acre by use type = $\frac{a+b+c}{3}$

Where a = residential cost/acre/year

b = commercial cost/acre/year

c = industrial cost/acre/year

but, commercial and industrial protection costs 25% more than residential protection. This figure was determined by the Troy Police Planning and is based on the need for extra patrols and the overlapping of patrol zones.

Therefore, police protection actually costs

$$\frac{a+(a+.26a) + (a+.25a)}{3}$$

$$\$555.61 = \frac{3.5a}{3}$$

$$a = \frac{\$555.61(3)}{3.5}$$

$$a = \$476.15$$

$$.25a = \$119.04$$

a = \$476.15 police costs/residential acre/year

b = 595.19 police costs/commercial acre/year

c = 595.19 police costs/industrial acre/year

In like manner, fire protection costs were calculated. However, one additional piece of information is necessary; it must be determined whether fire protection for future development will involve the purchase of new apparatus and the construction of new firehouses. These are both expensive, one-time items. In this case, fire department personnel do not foresee the need for either of the above. So, fire protection calculations were patterned after police calculations. The same 25% "surcost" for fire protection for commercial and industrial uses was utilized. It is due to fire distance computations for commercial and industrial buildings. Therefore, the formula is:

$$\frac{a+(a+.25) + (a+.25)}{3} = \$666.13 = \text{cost per urbanized acre for fire protection.}$$

$$a = \$570.97$$

$$.25a = \$142.74$$

$$a = \$570.97 \text{ residential cost/acre/year}$$

$$b = \$713.71 \text{ commercial cost/acre/year}$$

$$c = \$713.71 \text{ industrial cost/acre/year}$$

Recreation facilities and services

Cost Factors

Costs for recreation facilities and services will result for all types and densities of residential development. Standards for provision of recreation facilities are given at 10 acres/1000 population¹, convertible to acres/acre of residential development by density category.

Cost is broken down into two categories:

1. Operating cost (\$/acre)
2. Development cost (\$/acre)

With these figures, a cost for recreation facilities and services can be estimated in terms of \$/acre of residential development by density category:

$$\text{Cost X standard} = \text{Recreation Cost}$$

$$\$/\text{acre} \times \text{acres/acre} = \text{Recreation Cost} =$$

$$\$/\text{acre} = \text{Recreation Cost}$$

Categories of Cost are estimated as follows:

1. Operating Cost (annual budget) is calculated from actual budget expenditures in the City

¹. Recreation Open Space Inventory, City of Troy, p.22.

of Troy (1974) and checked and adjusted according to accepted standards as follows:

1974 Budget - Department of Parks & Recreation

Local contribution	\$310,000	
Revenues	145,000	
State per-capita aid	75,000	
<hr/>		
<u>Total Budget</u>		\$530.000

$$\begin{aligned}\text{Total Operating Cost} &= \text{total budget} / \text{total acres} \\ &= \$530,000 / 400 \text{ acres} \\ &= \$1,325. / \text{acre/year}\end{aligned}$$

Acreage added to the recreation open space system will not cause an increase in per-capita aid, and is assumed to cause no increase in revenues (see computation of development costs below). Therefore, assuming expansion of department personnel at the same rate as expansion of acreage, the total added cost will be met from local contributions.

Budget Expenditures/Capita	\$10./capita
Total Acreage/Capita	10 ac./100 pop.
	.01 ac./capita

$$\text{Total Operating Cost} = \frac{\$10./\text{capita}}{.01 \text{ ac./capita}} = \$1,000./\text{acre/year}$$

Assuming that while increased acreage will require a proportional increase in maintenance personnel, but a lower increase if any, in administrative, programming and other personnel, this figure based on standards is more realistic than the previous figure derived from current budget expenditures. The estimate of additional operating costs based on accepted standards is, therefore, for purposes of cost/benefit analysis.

ANNUAL OPERATING COST \$1,000/ACRE ADDED

2. Development cost (capital investment) is calculated from actual development experience and estimates in the City of Troy and checked and adjusted according to established standards as follows:

Proposed Development

<u>Site</u>	<u>Estimate</u>	<u>Acres</u>	<u>Cost/Acre</u>
112th. St. Expansion	\$30,000	2.3	\$13,043.
Riley's Park	10,000	0.8	12,500
Adams Playground	15,000	0.5	30,000
Vanderheyden Playfield	35,000	10.0	3,500
Freight Yard Playfield	30,000	4.0	7,500
122nd. St. Playfield	30,000	4.0	7,500
Stow Hill Playfield	30,000	2.0	15,000
123rd. St. Playfield	30,000	5.0	6,000
Beldon's Pond	30,000	5.0	<u>6,000</u>
Sum of per acre costs			\$101,043.
Mean per acre cost			\$ 11,227.

According to standards set by I.C.M.A., annual operating cost should be proportional to acquisition and development costs as follows:

$$\text{Annual Operating Cost} = 15\% \frac{\text{Acquisition/Development Costs}}{\text{Costs}}$$

(assume total unadjusted operating cost)

$$\$1,350. = .15 (A/D)$$

$$\$9,000. = A/D \text{ per acre}$$

Both of these figures are generalized estimates. It is not possible to narrow the range down without considering detailed plans for specific sites. Therefore, an arbitrary, workable standard is selected in the middle of the range.

ACQUISITION AND DEVELOPMENT COST \$10,000/ACRE

In applying these standards, each must be considered separately. Development Cost is a one time expenditure unless spread out over a period of years by borrowing. Operating Costs are annual expenses incurred to operate the system (administrative, maintenance, programming, tools, equipment, supplies, etc.)

A combined annual cost can be estimated for a specified number of years by amortising the development costs over that term and adding operating costs.

Example:

Acquisition and development of a new District Playfield to serve a housing development with anticipated population of 1000 people.

Standard required acreage - 10 acrs

Acquisition & Development Cost - \$100,000.

Annual Operating Cost - \$10,000/year.

This would amount to \$15.25 per year per person in Troy.

Public Works

Expenditures for public works fall into several categories of which only two were significant enough in amount and were variable enough by development type to be included in this analysis. This is not necessarily true everywhere. With the inclusion of

federal and state highway expenditures and local bond issues as financial mechanisms, it is nearly impossible to develop a standardized transportation cost-revenue impact model which includes all possible land-use alternatives. At any rate, the two costs to be isolated are sanitation and streets and highways.

Sanitation

The complexities involved in the provision of sanitation services for differing land-use alternatives must be analyzed individually and in consideration of very specific project design criteria. Recent development trends serve to indicate population density trends to be expected and, therefore, costs for these development types. Computations to determine yearly sanitation costs are based on the following data:

cost per year for refuse collection	\$476,481
cost per year for landfill operation	<u>42,481</u>
cost per year for total	\$518,664
tons collected per year	48,880
cost of solid waste disposal/ton	10.61
per capita daily refuse generated	2.3 pounds ²

Residential calculations can be made based on the above data plugged into the following formula:

residential density (persons/acre) X 2.3 lbs.
per person per day = lbs. per acre per day ÷ 2000 =
tons per acre per day Z \$10.61 X 365 = solid waste
disposal costs per year per acre.

In this computation, the one determining variable is the population densities of expected development types. Densities have

2. Sanitary Landfill-Planning, Design, Operation, Maintenance, N.Y.S. Department of Health, Albany, 1969.

been completed in a discussion of development typologies above.

low density residential is 4.85 persons per acre

$$4.85 \times 2.3 = 11.16 \text{ lbs./acre/day} \times \frac{365}{2000} \times \$10.61 = \$21.64 \text{ per acre.}$$

medium-density residential is 35.25 persons per acre

$$\frac{35.25 \times 2.3 \times 365 \times \$10.61}{2000} = \$157.00 \text{ per acre}$$

high density residential is 51.39 persons per

$$\text{acre } \frac{51.39 \times 2.3 \times 365 \times \$10.61}{2000} = \$228.86 \text{ per acre}$$

Commercial solid waste costs are determined after a few additional computations are made. Solid waste generation is quoted in pounds per 1000 square feet per day. Conversion must be made so that the final result will be recorded in dollars per acre.

Given:

retail solid waste generation = 13 lbs./1000 ft.²/day

wholesale and warehousing solid waste generation = 1.1 lbs./1000 ft.²/day.

average lot coverage 50% to 80% and for Troy

square feet of floor space/acre = 28,314 ft.²

average number of floors = 2 X 28,314 gives

115.88 tons/acre/year refuse for retail

9.80 tons/acre/year refuse for warehousing

and wholesaling

X \$10.61/ton =

\$1,229.59/acre retail refuse cost

\$ 103.97/acre wholesale and warehouse refuse costs.

Industrial data are reported on the basis of tons per employee and employees per acre of industrial land. Figures for these variables can be found in DiChiara's Planning Design criteria. Given:

median solid waste for industrial uses is 2.4 tons/employee and, employees per gross industrial acre for industrial parks is 18 persons.

In all, 43.2 tons/acre/year are generated at a cost of \$458.35/acre.

Streets and Highways

Location of a specific land-use alternative will have a direct bearing on its potential costs and revenues. If a moderate-sized commercial development were proposed for vacant land, which often lacks sufficient accessibility, major transportation improvements might well be required. (Some treatment has been addressed to this problem in Troy's task 8.11). In a more regional context, the revamping of access roads might possibly stimulate abutting development or shift existing traffic patterns. However, these considerations, while important, cannot be realistically costed-out. A more practical approach is the following analysis.

Troy's 150 linear miles of streets cost \$5,078.67 per mile for all maintenance operations. This includes patching, signalization, cleaning and snowplowing. A calculated street area per acre of residential land is 0.11 acres given an average width of 40 feet. Based on the figure of \$5,078.67 per mile it costs \$558.65 per residential acre in Troy to maintain those streets. Now, assuming wider streets are necessary for commercial and industrial development (with heavier usage and more depreciation), costs rise to \$698 and \$838 respectively for commercial and industrial development.

New road construction is not considered in this analysis due to the inflow of varying amounts of state and federal highway construction funds.

Revenues

More easily determined are the revenues generated by each development type isolated and defined in a previous step. Once values were computed in terms of dollars per acre for typical residential commercial and industrial uses, the calculations of results was a simple matter of dividing the revenues into components which are in proportion to expenditures.

Low density residential average assessed value is \$30,000 multiplied by 1.71 units per acre gives a value of \$51,300 per acre. Then $\$51,300 \times \frac{\$17.50}{\$1,000}$ (tax rate) = \$899.85 to City/acre of low density housing.

Medium-density housing unit density, population density and valuation are based on recently constructed units or soon-to-be constructed units. The average value is \$12,500/unit with 23.5 units per acre.

$$23.5 \times \$12,500 \times \frac{\$17.50}{\$1,000} = \$5,031.25 \text{ to City/acre of}$$

medium-density housing.

High density housing unit density and valuation are based on actual figures for public housing apartment structures servicing primarily large families. Average unit density is 18.16 units per acre with an average value of \$8,380 per unit.

$$18.16 \times \$8,380 \times \frac{\$17.50}{\$1,000} = \$2,663.17 \text{ to City/acre of high}$$

density housing.

Commercial valuations and sizes of parcels were gleaned directly from the City Assessor's files and it was determined that the City receives an average of \$3,047.50 per commercial acre in property taxes and \$7,196 per commercial acre in sales taxes. Resulting is

a total average City revenue of \$10,243 per commercial acre. Establishments used as samples in this step included large stores and small stores of a large variety and weighted according to relative abundance. Included in the sample were dry cleaners, bars, gas stations, "ma and pa" stores, supermarkets and drug stores.

As in commercial revenues, representative industrial (both warehousing/wholesaling and manufacturing) establishments were researched for assessed value and size. It was calculated that the revenues generated to the City were: wholesaling/warehousing \$1,269 per acre and manufacturing \$3,032 per acre.

In order to determine relationships between revenues and costs for each service, examined in this analysis, the revenues determined above were fractionated into quantities which are proportionate to the actual budget breakdown. For example, recreation costs are 9.8% of the total cost of all services analyzed. Therefore, 9.8% of the revenues were allocated to the respective development type boxes in Table I.

Also found in Table I is a T ratio figure that is discussed in the introduction to this work item. This T ratio compares the revenues of a particular development type to the costs incurred as a result of that development (for the categories of services analyzed.) Ideally, if this T ratio is greater than 1.00, the development should be beneficial. However, a more reliable ratio would be somewhat higher. The reader is cautioned here, that the figures presented in Table I are approximate, general figures and therefore, should not be construed to mean something they do not indicate at all.

Municipal Revenues in dollars / Costs in dollars = Revenue / Cost Ratio (T) by Use Type

SERVICE USE	PUBLIC SAFETY		RECREATION	PUBLIC WORKS		TOTALS	T
	POLICE	FIRE		SANITATION	STREETS		
LOW DENSITY RESIDENTIAL	308 476	369 571	75 74	60 22	88 559	900 1702	0.53
MEDIUM DENSITY RESIDENTIAL	1721 476	2063 571	418 450	337 130	493 559	5032 2186	2.30
HIGH DENSITY RESIDENTIAL	911 476	1092 571	221 4604	178 229	261 559	2663 6439	0.41
COMMERCIAL	3503 595	4200 714	850 —	686 1230	1004 698	10243 3237	3.16
MANUFACTURING	1037 595	1243 714	252 —	203 458	297 838	3032 2605	1.16
WAREHOUSING	434 595	521 714	105 —	85 104	124 838	1269 2251	0.56

TABLE I

Local Schools Methodology

School expenditures in the Troy area account for a little more than one-half of all local governmental expenditures and rely on the local property tax for approximately one-half of their revenues. Recent trends in school costs and revenues indicate that the total number of local students in the area have increased by about 20% between 1960 and 1975. School expenditures have been increasing at a much faster rate. During the same period, the annual budget for the Troy School District has climbed from \$3.35 million in 1960 to over \$13.5 million in 1975, an increase of over 400%. The taxable property base of the City of Troy has increased approximately 88% in assessed value between 1960 and 1975 growing from a taxable valuable of \$113 million a decade and a half ago to approximately \$212 million at the present time.

These figures indicate that general trends in the Troy area have been toward a slight, even growth in the number of students, a tremendous growth in school expenditures, but a much lesser growth in the school tax base. The result has been toward a steady increase in the tax rate necessary to support the operation of each school system.

For these reasons, it becomes very important to examine potential development alternatives for this area and their relative impact on school costs and revenues.

Methodology

Certain variables were selected for different land use types because of their influence on school costs and revenues. For residential land uses, the two variables found to influence costs and revenues the most were (1) average number of bedrooms per dwelling

unit and (2) the average assessed value per acre. In the case of commercial and industrial land uses, the key variables included (1) the average number of employees per land use type who reside locally and (2) the average assessed value per acre of the land use type.

From the information available, revenues and expenditures of local schools were calculated on a per student basis. Computations were then made to record these results in comparable terms, i.e. cost per acre by development type.

The City of Troy is served by two district and separate school districts (Troy and Lansingburgh) which have separate property tax bases and, therefore, levy different property tax rates. In order to simplify the research, methodology and computations of this analysis, a method was devised to combine the various factors to be considered from each school district. This syntheses resulted in the creation of one district for the purpose of the analysis. Since the Lansingburgh District serves approximately 31% of the students in the area and the Troy district serves 69% these were the proportions used in arriving at cost and revenues figures for the one imaginary district.

For Example:

Computation of 1975 tax levy for imaginary district

Troy District Rate = \$31.28/thousand assessed value

Lansingburgh Rate = \$21.25/thousand assessed value.

Imaginary District Rate = $(\$31.28 \times .69) + (\$21.25 \times .31)$
= \$21.58 + 6.59
= \$28.17 per thousand a.v.

Hence, the school tax rate of \$28.17 is used in lieu of the two separate rates of \$31.28 and \$21.25. This same procedure was used in calculating a single cost per student figure of \$1,896. for the area.

Cost/Revenue Analysis

The purpose of this analysis is to determine the relative impact on local school costs by various urban land use alternatives. Six urban land use types which represent anticipated development alternatives for the Troy area, were selected for study:

- Low density residential
- Medium density residential
- High density residential
- Manufacturing
- Warehousing
- Commercial

In order to compare costs and benefits of these various development types, a one-acre site was assumed in each case. Other characteristics such as dwelling/units per acre, or number of employees per acre were derived by existing conditions in Troy or based upon acceptable standards. An explanation of land use characteristics will be presented as the cost/benefit analysis is developed.

Impact of Residential Land Uses

The three residential land use types selected for analysis were attributed characteristics of residential alternatives expected to be developed in the Troy area in the near future:

- (1) Low density - single family units @ a density of 1.71 units per acre, generally 3 bedrooms with an average assessed value of \$30,000 per unit.

- (2) Medium density - townhouses and garden apartment construction @ a density of 19.0 units per acre, an average number of $1\frac{1}{2}$ bedrooms per unit, with an assessed value per unit of \$14,600.
- (3) High density - typified by high rise towers and public housing complexes @ a density of 18.16 units per acre. Average assessed value per acre is approximately \$8,400 with an average of two bedrooms per unit.

Given these types of residential development and the number of bedrooms per unit, school costs can be projected by using the bedroom multipliers (the number of school children that can be expected to be generated by a certain housing type and bedroom count). The following bedroom multipliers have been used in this study³:

Single-family - 3 bedroom - .626 students/unit

Medium density - 1-2 bedroom - .133 students/unit

High density - 2 bedroom - .181 students/unit

In 1975, the local school cost per student was \$1,896. In recent years, the proportion of this cost that has been borne by the local property tax has been approaching 50%. Therefore, for this analysis, a cost of \$948 per student is used; since this is the cost that would need to be supported by local property taxes.

Applying this data to our three residential land use alternatives, the following cost/revenue impact results:

3.

Housing Development and Municipal Costs by George Sternlieb and others, Rutgers Univ. p.7.

<u>Land Use</u>	<u>School Costs</u>	<u>School Revenue</u>
Low Density 1.71 Units 3 Bedrooms/unit A.V. = \$51,300/acre	\$1,015. per acre	\$1,445. per acre
Medium Density 19.0 Units 1.5 Bedrooms/unit A.V. = \$277,375/Acre	\$2,398 per acre	\$7,811 per acre
High Density 18.16 Units 2 Bedrooms/unit A.V. = \$152,158/acre	\$3,119. per acre	\$4,285. per acre

Costs are derived by multiplying the per student cost of \$948 by the actual number of students generated in the one acre site, for example:

--in low density development, there are 1.71 units and .626 students/units expected to be generated, which results in 1.07 students per acre at a cost of \$948 per student OR a total school cost generated of \$1,015. per acre. On the revenue side, each unit is assessed at a value of \$30,000 which yields an average assessed value of \$51,300 for the one-acre site.

Applying the school tax rate of \$28.17 per thousand, school revenues of \$1,445 per acre are realized for this type of land use alternative.

This same method is employed in each of the other cases to arrive at school costs and revenues.

Impact of Non-Residential Land Uses

For the three non-residential land use alternatives, a slightly different approach must be taken. As indicated previously, the

key variables include (1) the average number of employees per land use type who reside locally and (2) the average assessed value per land use type.

For this analysis, three constants were used for each of the land use alternatives. They were:

- (1) an average of .544 students are generated per employee (based on 1970 Census).
- (2) 18 employees per acre is assumed in each case - this roughly approximates the average number of employees per acre for all commercial and industrial sites (1970 Census)
- (3) There is also assumed to be an employee residential school tax spin-off associated with commercial and industrial development, that is, new employees moving into the area will require housing and will, therefore, be paying school taxes on their property. This employee residential school tax is assumed to be \$253.64 per employee which is calculated by multiplying the 1975 assessed value per employee (\$9,007.) by the school tax rate of \$28.17 per thousand A.V.

The variables involved in this cost benefit analysis are the assessed value per acre by development type and the percent of employees residing locally. The determination of assessed value figures was very straightforward. A selected, representative sample of each land use alternative was used in calculating an average assessed value per acre for that land use type.

The other key variable to consider in the analysis is the percentage of employees that are local residents and that would generate local school costs. The 1970 Census yields information that approximately 74% of all workers in all local jobs are also local residents. This figure, therefore, was used for the warehousing analysis. A figure of 61% local residents was used for manufacturing analysis since this was found to be the participation rate of local employees in this industry at the County level (1970 Census). Commercial uses were assumed to employ 87% local residents. This was a compromise figure between the average of 74% (assumed accurate for community commercial uses) and 100% which seems likely for neighborhood commercial uses because of the nature of these uses.

Applying this data to the non-residential land use alternatives, the following cost/revenue impact results:

<u>Land Use</u>	<u>School Costs</u>	<u>School Revenues</u>
Manufacturing 18 employees 61% residents A.V. = \$173,257	\$5,662. per acre	Land Use - \$4,879. Employee Residential - 2,785 Total \$7,664.
Warehousing 18 employees 74% Residents A.V. = \$72,571/acre	\$6,869.	Land Use \$2,044 Employee Residential 3,378 Total \$5,422.
Commercial 18 employees 87% Residents A.V. = \$174,150/acre	\$8,076	Land Use \$4,905 Employee Residential 3,970 Total \$8,875.

In the above analysis, costs are derived by the following equation:

School cost per acre = (# employees) (% residents)

X (.544 $\frac{\text{students}}{\text{employees}}$) = \$948.00 using manufacturing data in the equation, it becomes:

school cost/acre = (18) X (.61) X (.544) (\$948)

School cost = \$5,662. per acre

On the revenue side of this analysis, the assessed value of \$173,257 for a one acre site will yield \$4,879. in school taxes for this land use (at the present rate of \$28.17 per thousand A.V.) In addition, the estimated \$10.98 employees will generate \$2,785. in residential school taxes (if computed at the present ratio of \$253.64 school taxes per employee).

This same procedure, of course, is repeated for each of the other land use alternatives.

Conclusion

For Troy, under the conditions and assumptions of this study, it was determined that the most economically beneficial use is medium-density housing (garden apartments, town houses) while the least beneficial uses are wholesaling/warehousing and high-density residential. In all fairness, qualifications should be included in the above statements. Medium-density residential appears good for Troy because the development style associated with this use class is characterized by a low bedroom-to-unit ratio. Low bedroom-to-unit ratio indicates a low student-per-unit ratio. Warehousing firms, although not as a class economically beneficial to Troy, can sometimes individually be very beneficial to the local economy. Beneficial types should be noted within any development class so that the local community can act with discernment on proposed new development.

Users of Troy's methodology should note the following recommendations:

1. Develop an inclusive data base. In doing so, a list of costs, revenues, standards, sources and importance associated with all data should be listed.

2. All assumptions should be noted.
3. Attempt to apply the same level of detail to each category of service analyzed.
4. Isolate major costs and revenues for each service -- costs and revenues that cannot be accurately evaluated should not be analyzed.
5. Report all costs and revenues in terms of one common denominator.
6. Determine categories of development that reasonably reflect recent trends or which are expected in the future.

Prime developable parcels of land in Troy's coastal zone are well distributed throughout its extent. All parcels that can be described as prime for development received a rating of 5 or greater in work item 8.11, although strictly speaking, prime developable parcels should be only those with a rating of 9 or 10 or possibly as low as an 8 rating. Prime developable means that a parcel of land is marginally developable but has direct access to major routes or that it is capable of supporting any conceivable development but access may be less than excellent. A large tract of land in South Troy is prime for development. Other parcels exhibiting development potential are dispersed throughout the coastal zone area. Approximately 45% of undeveloped land in Troy's coastal zone area is ranked as prime developable using a 5 rating as the lower limit.

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City of Troy Coastal Zone Work Program
Work Item 8.13
COASTAL ZONE DEVELOPMENT PLAN

Introduction

Any land-use plan must be practical. Troy's Coastal Zone Development plan is produced on that basis. Ideally, the foremost consideration for a coastal zone land-use or development plan should be stewardship of the coastal zone and its resources. However, there are other forces that also must be reckoned with in order that the plan be realistic.

Adjacent land use exerts such an influence as to be a dominant force in the shaping of the urban landscape. Industrial uses are not usually compatible with residential uses. Besides the obvious noise, dust, and odor problems associated with industries, the truck traffic and employee traffic they generate are often not considered. On the other hand institutional uses are compatible in most cases with residential uses.

In addition to adjacent land use as a consideration is the social and economic needs of the neighborhood and the City. Economics has been analyzed in detail in Work Element 8.12 of this study. Therefore, economics will not be discussed here except to say that the results of 8.12 are imputed into this work element.

Social needs are identified on the basis of a land use inventory and its analysis as compared to accepted standards. Neighborhood recreation needs can be easily quantified by knowing the neighborhood population, actual recreation area and standard recreation area for that population. The analysis also shows other significant data such as dominant age groups, race, housing types, ages, and conditions. All of these quantities and more indicate neighborhood needs.

One last item to be considered is goals and overall societal priority setting (politics, if you prefer). Politics is not as subversive as the general public understands it to be. Usually politics effect wise choices. Forexample, it is politics that determines not to allow residences adjacent to heavy industry. So, politics is a real influence that must be considered in land-use planning.

The procedure employed by the City of Troy in completing the Coastal Zone Development Plan involved investigation of neighborhood characteristics and from that investigation isolating recreation and commercial needs of the neighborhoods. Then, coastal zone considerations such as flooding, fragile areas and coastal land capabilities were compared to identified needs and adjacent land use in order to satisfy neighborhood requirements. In areas of possible but conflicting land use recommendations, economics was the deciding factor.

The most obvious example of the utilization of this procedure occurs in the H.U.D.-designated 100-year floodplain. A general lack of commercial areas as well as recreational areas was identified for all of the C.Z. planning districts. Adjacent land uses are generally residential, hence, are generally compatible with both commercial and recreation. Considering foremost the coastal zone characteristics of flooding and natural development capability most of Troy's coastal zone, and in particular its H.U.D.-designated 100-year floodplain, influenced the authors to designate undeveloped coastal areas for recreational and industrial (water necessary) uses rather than commercial uses.

Neighborhood Planning District Analysis

The City of Troy is a City of distinct neighborhood areas. These have developed historically as the City developed and changed. They are distinct in location, land uses, types and patterns of development, population, social structure, economic class and other variables. However, it is no simple matter to set firm boundaries between the major neighborhood areas. Many breakdowns have been established for various purposes; and each is different from all the others. See Appendix A.

Planning district and neighborhood analysis offers a comprehensive view of the factors influencing the conditions of specific population areas. The urban development pattern, socio-economic population characteristics and basic topographical features were utilized in developing planning districts for the Coastal Zone Management plan. The following analysis of the districts explores and correlates existing conditions, developing trends and characteristics of neighborhoods and develops a series of recommendations for commercial, industrial and Recreation/Open Space Land Use.

Planning districts within the Coastal Zone Management Plan.

1. Lansingburgh
2. North Troy
3. Central
4. South Troy

Description/Needs Analysis/Recommendations

Lansingburgh Planning District

The Lansingburgh Planning District occupies the area north of 101st. and the Piscawen Kill Creek and is generally bounded by the Hudson River, Oakwood Avenue and the Town of Schaghticoke. The major urbanized region lies in the narrow floodplain between the river and the steep, wooded hillside, giving the residential neighborhood a prominent edge and buffer. The linear form of the area is reinforced by the gridiron street pattern. Dominant paths are 2nd. and 5th. Avenues running parallel to the river, with major entry points at 112th. Street, 126th. Street and Northern Drive. Major commercial concentrations are evidenced along these thoroughfares. There is no appreciable industry, although there is some warehousing.

The residential character of the area is fairly homogeneous throughout, with only slightly higher densities in the Knickerbacker Park area. Dominant housing is one and two family with minor low rise apartments, particularly Corliss Park and Martin Luther King Projects. The overall housing stock is good.

In terms of population growth, the upper Brugh area has experiences steady increases over the years, while central and lower areas have remained stable. Youth concentrations are fairly high particularly in North Lansingburgh. The older adult middle age group is the dominant group throughout Lansingburgh with some concentration of elderly in the central areas.

Socio-economically, Lansingburgh rates second priority consideration overall on a city-wide three-point basis. Median-family income levels are generally in line with or slightly higher than the city average. Home-ownership is fairly high,

particularly in the upper Burgh. 20-40% of the households in the central and lower areas of the Burgh have no car. There are substantial minority concentrations in the 112th. Street and 2nd. Avenue area, Corliss Park and Martin Luther King Projects.

The pattern of land use in Lansingburgh has been basically set. Land use efforts in the community should be directed toward preserving and enhancing the area's residential quality, restraining commercial sprawl within the bounds of existing commercial areas, and towards effective accommodation of appropriate new development in the community, particularly in the Oakwood and Gurley Avenue areas. An additional important land use concern is the protection and proper development of the area's natural resources: the Hudson Riverfront, the Paensic Kill system and the community's green eastern buffer, the hillside, including the Diamond Rock area.

Needs Analysis/Recommendations

Lansingburgh and its surrounding suburbs of Schaghticoke and Brunswick may be considered as a small neighborhood area. 1970 U.S. Census data for Census Tracts 401, 402 and 403 indicate Lansingburgh's population as approximately 14,500 persons. Population expansion has been greatest in Census Tract 401 (the northern section) and in the Townships of Schaghticoke (+18%, 1960-1970) and Brunswick (+24.3%, 1960-1970). Within the City of Troy, greatest potential for residential development and population expansion is in the Gurley-Oakwood Avenues area.

The median family income of Lansingburgh is slightly above that for the City. Car and home ownership ranges from moderate in Census Tract 403 and Census Tract 402 to higher in Census Tract 401. In the adjacent townships, the median family income, car

and home ownership are at slightly higher levels.

In general, expansion and investment in Lansingburgh's commercial areas may be expected, particularly in the northern end, most conveniently located to areas of new residential development. Although there has been some decline in the number of small commercial establishments, due to increasing consumer preference for the large, auto-accessible stores, Lansingburgh's commercial areas will continue to remain important for neighborhood and community needs.

Commercial Land Use

The commercial areas of Lansingburgh have been encouraged to develop in a narrow strip fashion along Second and Fifth Avenues by existing commercial zoning delineations. Although there is no one central community-wide shopping area, these groupings of diverse types of retail and service establishments serve neighborhood and community convenience goods and service demands. The two major locational problems for commercial development in Lansingburgh are (1) limited vacant land and (2) traffic circulation problems at major intersections. Although several supermarkets and a neighborhood shopping center have been built, the highly urbanized nature of Lansingburgh presents limitations to shopping center development. But unless commercial development is appropriately controlled and concentrated at existing commercial areas, commercial sprawl into sound residential areas will continue to be induced. Improvements of the major intersections proposed under the TOPICS program are expected to significantly alleviate traffic problems at the major commercial nodes.

Many commercial establishments have remained or located at sites of previous commercial or industrial use. The increased levels of auto ownership and use, however, present a need for innovative solutions in parking area provisions. Off-street parking and service areas have been a problem to provide, particularly for the small commercial establishments, whose lot sizes are small and where existing building locations preclude parking in front of the store. On the other hand, many of the newer, larger establishments have been able to provide for parking needs. Other important site considerations, recognizing Lansingburgh's primarily residential character, are the provision of adequate protective screening landscaping of commercial parking and service areas, control of signs and encouragement for developing an attractive street-front appearance.

Recommendations

Commercial expansion and development should be encouraged primarily within the existing commercial area locations to restrain sprawl from encroaching upon stable residential neighborhoods. Long range provisions for commercial development in the area of Northern Drive and Oakwood Avenue and its relationship to future residential development should also be considered. Of particular concern is the large amount of vacant land along both sides of Oakwood Avenue available for industrial, commercial or other development.

To effectively improve problem intersections, street traffic and commercial access-exit movement must be coordinated and well planned, to minimize automobile, bus or pedestrian movement conflicts.

Commercial establishments must meet site requirements and adequately protect adjacent residential uses from visual or noise excess. The high percentages of residential uses and residential-commercial mixed uses within the designated commercial areas, present additional demands for parking and facility of pedestrian movement that must be provided for. Types of commercial uses allowed should be primarily those that serve neighborhood and community needs. Heavy commercial or light industrial establishments that cannot meet site requirements should be encouraged to relocate to more appropriately situated heavy commercial zones. Other uses, such as institutional uses or public community services, should be encouraged within or near the commercial areas to strengthen and develop the identity of the community. Overall, efforts in commercial area development should be encouraged toward enhancing the living quality of the neighborhoods and the community.

Heavy Commercial' - Light Industrial - Industrial

Land Use

Several sites of heavy commercial, light industrial and industrial use are scattered throughout Lansingburgh. Auto sales, repair and wash establishments are located along portions of Fifth and Second Avenues, as are several printing and wholesale-retail operations. Although these sites are generally within the existing commercial areas, several isolated heavy commercial, storage and industrial uses are located along First Avenue and along the foot of the undeveloped hillside to the east. The largest industrial areas include the 49 acre Water Filtration Plant area and the 11.5 acre industrial area at the east end of 102nd. Street. In addition, large tracts of vacant land in the

Town of Brunswick along both sides of Oakwood Avenue are presently zoned for industrial, commercial or residential use.

Many of the older establishments or those located along Second and Fifth Avenues are limited by space restrictions, although the relatively newer establishments do have more space available for expansion, parking and landscaping needs. Though the dispersed locations of numerous establishments present visual, noise and access problems, several have presented significant efforts to minimize the impact of these conditions upon adjacent or nearby residential uses. The sites located at the foot of the eastern hillside are rather uniquely situated, such that one or more sides of the site do not abutt residential uses. Provisions for special development such as for operations involved in the water filtration process must receive particular consideration in determining environmental and land use impacts.

Recommendations

Heavy commercial, light industrial and industrial establishments in Lansingburgh should be required to meet parking, service area and particularly screening and landscaping requirements to protect all residential areas. The larger sites, that adequately meet site requirements and have site space available for expansion, should be permitted to remain as allowable uses. The smaller sites, those located in the commercial areas along Fifth and Second Avenues, should be zoned commercial to allow for the possible conversion of the sites and buildings to retail, service, professional or related uses. In general, efforts should primarily be directed toward alleviating the impacts of these uses upon the residential quality of Lansingburgh.

Particular consideration of the possible impacts of commercial or industrial development of the vacant land along both sides of Oakwood Avenue in the Town of Brunswick upon residential or other development in Troy must be given and all development carefully analyzed and coordinated.

Recreation Land Use

Recreation Standards

	<u>Existing</u>	<u>(acres) Standards</u>	<u>Deficiencies</u>
Playgrounds	3.39	18.20	-14.81
Neighborhood Parks	2.39	14.56	-12.17
District Playfields	2.30	18.20	-15.90

Preliminary recreation analysis for this planning district indicated a strong interest in construction of a bikeway along the former railroad right-of-way. Interest was also voiced for new playground sites and environmentally oriented recreation such as the Poesten Kill waterfall and hiking area. Major recreational activities pursued include biking, swimming, baseball, basketball and fishing. The analysis also singled out bikepaths, hiking trails and basketball courts as facilities most needed in the district.

Recommendations

Generally, active recreation needs should be satisfied through expansion of existing district playfield sites and the acquisition and development of new playfields in the upper Burgh area. This should be augmented by providing smaller playground sites at the neighborhood level, utilizing schools, community centers, social clubs and youth organizations. The open space links identified in the open space plan should be considered the prime resources for satisfying recreation needs within the neighborhood, specifically the Boston and Main Railroad right-of-way,

the Hudson River front, the Paesic Kill and the Piscasen Kill-Frear Park system.

- expand, development and maintenance of existing public recreation sites for both active and passive facilities.
- coordination and support of school and private recreation facilities and services.
- coordination in development, expansion and rehabilitation of Knickerbacker Park to effectively serve as a community park.
- develop playfield and park facilities in the upper Lansingburgh area.
- develop the B & M Railroad bikeway and open space link, including a series of recreation facilities along it as part of the system and providing key access points to the bikeway along existing street right-of-ways not being utilized for vehicular traffic.
- preservation of existing open space and development of scenic vistas, parks, natural recreation areas and walkways along the Hudson River as feasible on a long range basis.
- preservation, clean-ups and utilization of Paensic Kill stream and reservoir system for hiking trails and natural recreation use.
- street landscaping and entranceway treatment along 2nd. and 5th. Avenues, Northern Drive and 112th. and 126th. Street entrances with small mini-parks and sitting areas as part of the design features.

NORTH TROY PLANNING DISTRICT

Located just north of the central core of Troy's downtown business district is the North Troy planning district. It is bounded on the north by 101st. Street, on the south by Hoosick Street, on the west by the Hudson River and on the east by the B & M Railroad right-of-way. Socially and economically, the North Troy planning district along its borders, is indistinguishable from adjoining bordering planning districts. It should be stressed that planning district boundaries have been established based on absence of social interaction between areas, rather than socio-economic differences. Completion of the proposed Hoosick Street Bridge may precipitate land use changes toward light industrial uses in the immediate area of the bridge. Additionally, vacant property within a few blocks of the bridge may feel increased pressure for industrial-warehouse development. Within the North Troy planning district there exists a general trend of low income in the south to middle income in the north end, with no abrupt changes in median family income within the district. Businesses and multiple family residences make up the highest percentages of uses although there is a commercial-warehousing area in the southeast corner and a manufacturing commercial concentration on the western edge. Small commercial businesses are sprinkled throughout. Manufacturing and commercial uses are located along the major paths River Street, Fifth Avenue and Sixth Avenue. A 50-unit public housing complex is located in the northwest corner. There are a minority groups concentrations in the south and central parts of this planning district.

North Troy is made up of three sections, each being comprised of smaller neighborhood areas. Each neighborhood has unique problems. Some recurring problems can be detected throughout the planning district. Generally, it is a deteriorating district. There is a lack of local necessity businesses and a high incidence of absentee landlordism, which contributes toward vacancy and outright abandonment of commercial and residential properties. It is a prime code enforcement area. Population density is high while housing is of poor quality. Median income is low, having an influence on the percentage of home ownership and amount of mobility. There is a low educational level with a high High School dropout rate and high incidence of juvenile offenses. Only one recreational area exists, that being owned jointly by the private and public sectors. Its potential has not been realized since approximately 50% of the area is vacant. Other incidental problems include traffic noise, parking shortage and lack of green areas.

The differing locational and site requirements of the various land uses existing in North Troy indicate a need for their organization into precise, identifiable and functional groupings. A general view of the plan for redeveloping North Troy calls for the establishment of a firm line in the area of Middleburgh Street, encouraging heavy commercial and light industrial uses to the south and redevelopment of the residential area to the north. To accommodate the commercial needs of the neighborhood area, yet retain the area's basically residential character, a limited commercial area located along portions of River Street and 6th. Avenue should be provided.

NEEDS ANALYSIS/RECOMMENDATIONS

The neighborhood area between 101st. and Middleburgh Streets has a population of approximately 2,900 persons according to 1970 U.S. Census data. A much smaller neighborhood of less than 1,000 persons is located along 5th. and 6th. Avenues between Rensselaer and Hoosick Streets. Family income levels for North Troy range predominantly from low to moderate. More than 40% of family households do not have an automobile available. Special characteristics for consideration in the neighborhoods include the concentrations of racial and ethnic groups.

COMMERCIAL LAND USE

Commercial establishments in North Troy are most predominantly located along River Street and 6th Avenue. Most neighborhood oriented establishments are clustered at the side street intersections, although there is no central neighborhood commercial area. Most of the establishments are small in size, rely on pedestrian access or on street parking and have residential uses above and in adjacent buildings. Uses not servicing neighborhood needs and presenting problems in the area include those establishments that:

1. do not provide adequate space for frequent truck service or
2. adequate parking for through traffic customers, or
3. those that do not protect adjacent residential uses from visual or noise excesses.

The lower North Troy neighborhood, although it has lost numerous small neighborhood stores due to demolition for the Hoosick Street Bridge, lies within a one-half mile radius of the Troy Plaza. Significant increases in the number of neighborhood and community commercial establishments within the North Troy area are not expected.

RECOMMENDATIONS

The designated commercial area should be limited to primarily existing establishment locations. Types of commercial uses allowed in this area would be neighborhood and community commercial. To aid in improving the residential quality of North Troy and to alleviate some of the traffic congestion along River Street and 6th. Avenue, site requirements for the neighborhoods commercial uses must be implemented. The larger, community oriented establishments in particular should provide adequate parking, service areas, screening and landscaping. For the needs of the smaller establishments, adequate area should be provided to accommodate the development of jointly or separately operated, landscaped parking and service areas.

GENERAL COMMERCIAL LAND USE
(HEAVY COMMERCIAL - LIGHT INDUSTRIAL)

Traditionally, North Troy and the North Central areas have had a high degree of heavy commercial and industrial uses because of several factors including: initial development as an industrial area based on access to the Hudson River for power and transport; access to the B & M railroad and proximity to the Central Business District. Important resources for the area at present are the major streets leading to and from the Central Business District (6th. Avenue and River Street) and the forthcoming development of the Hoosick Street Bridge and interchange. These transportation resources fit the locational criteria for heavy commercial, wholesale, distribution and other light industrial establishments and present the lower North Troy and North Central areas as suitable for heavy commercial-light industrial zone redevelopment.

Existing heavy commercial-light industrial uses are presently located along Sixth Avenue and River Street (south of Ingalls) and at several scattered locations within the residential area north of Ingalls. The Sixth Avenue portion has numerous existing heavy commercial, industrial uses and a total of 11.66 acres of vacant land and buildings, 9.48 of which are vacant railroad yard and bridge interchange lands. Although the Hoosick Street Bridge proposal calls for a widening of 6th Avenue to 40 feet, no on-street parking would be allowed. The west side of 6th Avenue is at present residential. Important considerations for redeveloping the area include:

1. provision of ample off-street parking and service areas to limit interference with traffic circulation at the proposed bridge;
2. encouraging improvements and provision of site amenities at existing establishments;
3. protection of the hillside residential neighborhood to the east and (4) presentation of an aesthetically acceptable route environment to the Central Business Dist.

The conglomeration of small commercial uses, gas, auto related and other establishments at the River St. - 5th. Avenue - 6th Avenue node present a disconcerting introductory image to the residential area of North Troy. Major problems include:

1. visual and noise pollution;
2. limited or no space for provision of adequate off-street parking and service areas or for;
3. vehicular access and exit.

In addition, the institutional uses, also located within this node, lack adequate space for the provision of parking or to fulfill recreation open space needs.

Uses along River Street are predominantly heavy commercial or industrial. Most of the larger establishments are located on the west side of River Street and occupy either new or rehabilitated buildings adapted to suit their needs. Parking areas, although limited, are provided. The east side of River Street

has numerous smaller establishments, many of which rely on street parking. Several vacant buildings, parcels and scattered residential sites provide opportunity in the area for expansion of existing or location of new businesses.

The scattered and isolated light industrial and heavy commercial uses in the residential area north of Ingalls Street seriously affect the neighborhood's residential quality. The disjointed access from River Street or 6th. Avenue to these uses is a disruptive influence to nearly every residential section. Although parking areas are provided, particularly at the larger sites, there is virtually no protection of adjacent residential uses from visual or noise excesses. Examples of uses with high outdoor activity or storage and service needs include auto repair shops, the Public Works garages, contractor or other supply storage areas, junk yards and warehousing establishments. An additional major problem is the need for improving the quality of building maintenance and upkeep conditions that directly affect the quality of the adjacent residential neighborhood.

RECOMMENDATIONS

To comprehensively improve and redevelop lower 6th. Avenue and River Street (south of Middleburgh) as a heavy commercial-light industrial area, all new or expanding businesses should be required to meet minimum site standards including: minimum lot sizes, parking area ratios, entrance-exit and service area criteria, screening of service areas and landscaping requirements. The enforcement of these requirements is essential to developing an efficient amenable travel route to the Hoosick Street bridge and the Central Business District and in redeveloping the

viability of the adjacent residential neighborhoods. To aid in the rehabilitation of the residential area north of Ingalls, all existing light industrial or heavy commercial uses should be required to meet site requirements and improve their physical appearance, or be encouraged to relocate operations to more suitable and appropriate sites within designated heavy commercial or industrial zones.

RECREATIONAL LAND USE

	<u>Esisting</u>	<u>Standards</u>	<u>Deficiencies</u>
Playgrounds	1.01	5.85	4.84
Neighborhood Parks	--	4.68	4.68
District Playfields	--	5.85	5.85

Recreation analysis indicated that sites used most often were community parks and district playfields located well outside the planning district. In addition, the primary modes of transportation to and from the recreation areas are biking and walking. Bus ranked low because of two factors: low income and no direct routes to recreation areas. It should be mentioned that analysis indicated use of recreational facilities located in other sections of Troy, particularly Prospect Park, frequented primarily because of minority groups social interaction. Specific activities preferred include biking, swimming, playground activities and to a lesser extent basketball, baseball and arts and crafts. Facilities and activities preferred also include bike trails and a riverfront park.

RECOMMENDATIONS

In general, acquisition and development of sites should be coordinated so as to provide recreational facilities at strategic locations. Acquisition and development should include small corner lots for tot areas. Schools, youth organizations, churches and clubs should be utilized in various ways. Easier access to major recreation areas should be provided, especially the Piscawenkill approach to Frear Park and the B & M Railroad right-of-way. The Hudson riverfront is another major recreation open space resource.

1. acquire and develop in conjunction with New York State Department of Transportation, the abandoned railroad right-of-way into a district, family recreation area/develop bikeway north on right-of-way providing linkage with a fully developed Cragin Park, Central Little League Playfields
2. improved Piscawenkill access to Frear Park
3. full capacity development of Frear Park offering a broad range of recreational, cultural and educational experiences
4. acquire and develop a number of vacant strategically located lots into totlots and playfields
5. acquire vacant riverfront property for use as a scenic vista and boat launch facility and active and passive recreation, riverfront fishing and walking areas.

6. utilization of services and facilities of clubs, youth organizations and public schools
7. long range tree planting program along the major streets, particularly 5th and 6th Avenues and River Street.

CENTRAL PLANNING DISTRICT

The Central District lies between Hoosick Street and Ferry Street, the city's two major east-west routes, and is bounded by the Hudson and the Hillside. It is an area that may generally be considered the focal point of the city, heavily commercial and institutional, with some light industrial uses and several somewhat isolated residential areas. The city has seen great changes in the past 10 years in terms of urban renewal of the hillside area and is presently engaged in a massive redevelopment of the central business area; constructing the Uncle Sam Mall, a new City Hall and some new housing. In the future, State Department of Transportation plans building a bridge across the Hudson connecting I-87 to Hoosick Street (Route 7) at Eighth Street, emphasizing a transportational, physical and visual edge to the district.

Two general areas comprise the Central District, lying on either side of Federal Street. To the north, lies a disintegrated, deteriorating area composed of commercial and light industrial uses along River and Hoosick Streets and a small two and three family residential neighborhood with a commercial scattering along Fifth and Sixth Avenues. It is an area which has seen some redevelopment efforts. To the south of Federal Street lies the central commercial, professional, governmental and institutional area. Within this area, are four public high rise residential projects and a disperse scattering of high density rental units. Some additional housing is expected in relation to the development of the Uncle Sam Mall.

Socio-economically, the Central District is of First priority. It is a small, although high density area with significant concentrations of young adult and elderly. Income and car availability are low. The area has a significantly high percentage of minority residents. Another special consideration within the district is its high daytime activity and use level, both in terms of people employed within the district and those shopping within the commercial area.

Land uses within the Central area may be grouped into several sections: The Fifth-Sixth Avenue residential neighborhood, the new residential area along Federal Street-Sixth Ave., the River Street heavy commercial and industrial uses, Urban Renewal Project A., Urban Renewal Project C (the Uncle Sam Mall Project), the Second Street Historical Area and the remainder of the Central Business District commercial area. (These groupings are not meant to be all inclusive, but serve to indicate the diversity of land use and other conditions within the Central area.) Through urban renewal, public housing and transportation programs, the area has begun to see major changes for the redevelopment and revitalization of the Central Business District. However, there remain several sections within the Central Area and in its adjacent areas that require coordinated rehabilitation, redevelopment or improvement efforts so that Troy's Central Business District may be re-established as a strong, viable regional employment and commercial center.

NEEDS ANALYSIS/RECOMMENDATIONS

A regional scale re-establishment of the Central Business District is a function of both retail-service trade and employment. Development of a growing regional commercial center is directly related to the expansion of employment and income of the population residing within that commercial market area. Though Troy has historically evolved as a separate subcenter of the Capital District Region, it has become increasingly dependent upon particularly Albany County, for meeting employment and commercial needs. However, there remain significant socioeconomic characteristics and a physical structure that express for the Troy area a separate identity.

Employment within the Troy market area has been heavily weighted towards an industrial base, specifically a low value-added manufacturing employment base, that has over the past decades, substantially declined in scope. Employment figures indicate that the vast majority of employment increases for residents of Rensselaer County have been located outside of Rensselaer County resulting in a rise of the net out commutation ratio to 1.403 in 1970.* Although per capita personal income levels for Rensselaer County and Troy have grown at impressive rates, they remain below the levels for Albany and Schenectady Counties.** Personal income levels for Troy and Rensselaer County may be expected to continue to rise as the employment base adapts to accommodate the expected region-

* Rensselaer County O.M.D., "CETA Fiscal 1976 Proposal", p.7.

** CDRPC. "Economic Study", 1970, p.91.

wide growth in government, retail and service trade. Occupational groups showing greatest increases will be the service, professional and clerical groups and to a lesser extent the managerial and sales groups.*** The diversity of higher education institutions in Troy, including Hudson Valley Community College, Russell Sage College and Rensselaer Polytechnic Institute and other colleges in the Capital District as well, present an opportunity to attract and meet the employment needs of major new or expanding retail or service firms and offices locally, in the Troy Central Business District area.

The consumer market for Central Business District commercial investment has been investigated in several studies.***** The primary market area has been found to be regional in scale, consisting primarily of the population of Troy, the surrounding suburban townships of northern Rensselaer County and the river communities on the west side of the Hudson River in Albany County.

Total personal income figures for consumers residing within the primary trading area indicate good sales potential for the establishment of the downtown shopping mall complex. Although population decreases in the older, urban communities may be expected to continue, the population growth in Troy's suburban townships in Rensselaer County would outweigh this decline and should expand the regional market volume of the Central Business District. In addition to the U.S. Mall shopping complex; various

*** Rensselaer County O.M.D. "CETA Fiscal 1976 Proposal", p.36.

***** Specific marketability studies have been done for Troy
Urban Renewal Projects C and D (The U.S. Mall Project)

special retail and service firms; and cultural, leisure and institutional facilities; a portion of commercial activity in the Central Area will remain oriented to serve adjacent neighborhood and community commercial needs.

CENTRAL BUSINESS DISTRICT LAND USE

Several key factors develop the structure of the Central Business District, primarily: transportation access, the locations of major uses (employers, businesses or groups of businesses), and parking availability. The arrangement of these basic elements and the development of their supportive functions present the image of the Central Area.

The primary core of the Central Area lies between Federal Street (the Green Island Bridge) and Congress-Ferry Streets (the Troy-Watervliet Bridge) and is situated as the hub of major local street traffic. The area between the proposed Hoosick Street Bridge and the Central Business District primary core exhibits a secondary locational potential for redevelopment with its accessibility to the region-wide highway network as does the area immediately north of Hoosick Street. Development of an Eighth Street link south to Adams Street would also establish good locational qualities for redevelopment of the area east of Fifth Avenue, in the South Central Area. Other street and intersection improvements, such as the realignment of Federal Street, the widening and relocation of Sixth Avenue at the Hoosick Street Bridge interchange and other intersection modifications and directional adjustments will further increase street carrying capacity to facilitate traffic flow through the Central Business District.

The land use structure of the primary core of the Central Area has been basically established through the development of Urban Renewal Projects A and B (east of Fifth Avenue) and the proposed development of Project C (the U.S. Mall Project). The former two projects have created a somewhat employment oriented, rather than consumer oriented, business section along Sixth Avenue, characterized by large sites, off-street parking facilities, landscaping and other site amenities. High rise residential buildings mark its northern and southern ends. The residential, institutional and small professional and commercial uses along Fifth Avenue separate the Sixth Avenue business section from the high intensity consumer oriented commercial activity of the Third-Fourth Street commercial section and the proposed U.S. Mall. The historic district designation at its northern end further exemplifies its character. Perhaps the most significant stimulus to the Central Business District revitalization will be the construction of the U.S. Mall and its auxiliary facilities. The complex, at its full scale, will serve as both a subregional shopping and employment center, designed to maximize land utilization. The immediate area's parking needs would be met by construction of parking garages (1300 spaces for Phase I). Provisions for access-exit movement, service areas, pedestrian movement, sitting areas, and landscaping are also considered at a comprehensive level. Project design for later phases also establishes a coordinated approach for utilizing the potential of the Hudson riverfront.

Sections of the Central Area south of Broadway (west of Fifth Avenue) include the Third-Fourth Street commercial section, the historic Second-First Street residential and professional section and the historic River Street warehouse rehabilitation or redevelopment area. The Congress-Ferry Street corridor includes the Russell Sage College Campus, the Rensselaer County offices and a section with a mixture of small neighborhood and community commercial types of establishments, portions of which are in need of rehabilitation or redevelopment. The ends of this corridor are marked by high rise public housing projects. One of the biggest problems in these two areas is the lack of off-street parking and service areas causing traffic flow problems along streets and at intersections. A preliminary study of parking in the Central Business District by the City Bureau of Engineering found a lack of off-street parking facilities to adequately meet present parking demand and limited available vacant land in these areas, possibly indicating a need for construction of a parking garage in the Congress-Ferry Street corridor and a need to require off-street parking provisions for any new construction or redevelopment. Improvements for the Central Business District environment have been started through programs such as those for underground utilities, new street lighting, the Troy Tree Planting Project (440 trees sponsored by the Downtown Development Committee in conjunction with the City of Troy), park rehabilitation, new mini-park construction and the trash receptacle program.

North of Federal Street lie the Fifth-Sixth Avenue high density residential neighborhood and the River Street commercial and industrial section. The residential area's neighborhood commercial uses along Hoosick Street have been lost to demolition for the bridge, however, the neighborhood lies within a one-half mile radius of the Troy Plaza shopping center. Although there remain several scattered stores, institutional uses and a new neighborhood center along Sixth Avenue, significant increases in neighborhood commercial use are not expected. The area in the past has had a great deal of heavy commercial and light industrial uses, based on the through traffic along streets leading to the primary core of the Central Business District. Most of the remaining establishments are located along River Street and include clothing manufacturers, printers, warehousing, auto sales and several small neighborhood and community commercial stores. Although the larger establishments provide some parking, there is considerable overflow. The smaller establishments also rely on street parking and loading. There are no provisions for control of visual or noise excesses. The construction of the Hoosick Street Bridge and other traffic improvements can provide a basis for rehabilitation and redevelopment of this section for existing types of general commercial and industrial uses.

RECOMMENDATIONS

The characteristics of various types of land uses in the Central Area, such as orientation towards employment, consumer or residence and their other special distinctions such as high

levels of day or evening activity, provide the diversity that exemplifies an active downtown. To establish a strong, viable Central Business District there is a need to maximize land utilization, yet minimize conflicts between different types of uses; to comprehensively develop automobile and mass transportation access, off-street parking, loading areas and yet provide adequate site amenities and public access to environmental resources such as the Hudson River to establish a Central Business District environment that is pleasing to work, shop and live in.

The rejuvenation and revitalization of the Central Area can be a product of two forms of redevelopment: demolition and new construction or rehabilitation of existing structures and areas. The majority of new construction within the Central Business District has been in the Urban Renewal project areas. The land use objectives and regulations for these areas, in coordination with transportation development, should be recognized as a stimulating force for Central Business District rejuvenation and reaffirmed through coordinated, complementary land use objectives and regulations for their adjacent areas. All new construction or major rehabilitation should be required to provide site necessities, such as off-street parking, off-street loading, landscaping and screening. In cases of minor rehabilitation of sites, where existing structures preclude adequate provision of requirements on site, effort should be made to meet parking needs through coordination with other businesses or city developed parking areas or parking garage facilities. Off-street loading

facilities should be provided where possible, to reduce traffic flow problems along downtown streets. Effort must also be made to coordinate with the various amenity programs within the Central Area, including landscaping, litter control and provisions for safety in pedestrian movement, such as well maintained sidewalk conditions. As indicated in the preceeding analysis, transportation improvements will improve accessability and traffic flow within the Central Area, increasing the tenebality for redeveloping deteriorating sections or buildings to appropriate uses by enhancing their locational qualities. Through cooperative effort, the Central Area can be redeveloped to be a viable and amenable employment, commercial, cultural and residential center.

RECREATION LAND USE

Recreation Standards * (Residential Use)

	<u>Existing</u>	<u>Standard</u>	<u>Deficiencies</u>
Playgrounds	3.67	4.13	.46
Parks	3.9	3.30	+.6
Playfields	---	4.13	4.13

Recreation analysis results indicate heavy utilization of Prospect Park, the available playground sites and private indoor facilities and services. The concentrated quality of the housing projects and of the central area in general, was expressed in a desire for larger recreation and open space area use, especially for active recreation. Walking was by far the most common form of transportation and equipment requiring activities the least often participated in.

RECOMMENDATIONS

Active recreation sites are currently available at the neighborhood level. Accessibility and development of recreation service and facilities for larger field activities and other use must be developed. Resources primarily available include Prospect Park, the hillside area, and the riverfront, the latter in conjunction with the Uncle Sam Mall development.

1. maintenance and rehabilitation of existing public recreation sites
2. coordination with and support of the privately owned recreational, cultural, and educational facilities and services.
3. improve access to and develop Prospect Park for full range recreational activity use at a community level
4. use and landscaping of New York State Dept. of Transportation lands along and between Congress and Ferry Streets and long range playfield and passive area development
5. preservation and development of buffer and open space areas on hillside along Eighth Street between Congress and Jacob Streets, including walkways and open playfields, available also for the Hillside neighborhoods use and the student access to R.P.I.
6. development of a landscaped Hudson Riverfront vista, walkway and sitting areas in conjunction with construction of the Uncle Sam Mall

7. provisions within the Uncle Sam Mall and central business area for pedestrian access, walkways, sitting areas and opportunities for cultural, educational and historical use
8. development of the Sixth Avenue playground and future development, in coordination with the construction of the Hoosick Street Bridge, of an inter-connecting system of walkways, bikeways and recreational uses linking the neighborhood to the North Troy and Hillside neighborhoods.

South Troy Planning District

The South Troy planning district lies within a half-mile strip in the southwestern part of the city; generally, bounded by the Central Business District, the Hudson River and the narrowing floodplain hillside, with some smaller areas of development on the hillside itself. The district consists of several neighborhood areas, primarily residential in character with a scattering of commercial and institutional uses and a major area of light and heavy industry along the Hudson. Fourth and Third Streets, major north-south paths, pass through a residential, small commercial area. Mill Street/Campbell's Highway, Vandenberg Avenue and Burden Avenue are other major paths more favorably shielded by existing hillsides and wooded areas.

South Central Troy from the Central Business District to the Poesten Kill Canal, socio-economically requires a first priority consideration. It is the most densely urbanized area, predominantly three or more family with an area of two-family residential. In terms of population development, the area is fairly stable with a high concentration of young adult and a medium concentration of youth in the 1-5 year age groups. Family income is low and less than 60% have automobiles. The area also has a substantial population of Italian descent.

Lower South Troy, narrowing from the Canal to Mill Street, is generally two-family with some three or more family residential. The smaller neighborhoods, such as the Mann Avenue and Thompson Street areas are located on the hillside and have a lower density single and two-family residential character. Some

limited development may be expected in the Stowe Hill area, although the steep hillside presents severe environmental limitations. Socio-economically, these neighborhoods are of second priority consideration. These areas have relatively high concentrations of adults, of youth; and a moderate concentration of elderly. Residents have a moderate family income and 60-80% have cars at their disposal. Italian, Polish and other ethnic groups are also located in these areas.

Objectives for the South Troy area include (1) stabilization and improvement of the residential sections, (2) re-establishment of a neighborhood commercial area along Fourth Street (3) rehabilitation and improvement of the industrial area west of First Street and (4) redevelopment of the Fifth Avenue - Haverman's Avenue area.

Need Analysis/Recommendations

1970 U.S. Census data showed a total population for the South Troy neighborhood area to be approximately 12,663 persons in census tracts 408, 409 and 410.

Family incomes are predominantly low to moderate with a particular concentration of low income in the two public housing projects. Home ownership is about 25% in census tract 408, 38% in 409 and 50% in 410. Automobiles are not available to 46% of the households in Census Tract 408, 36% in 409 and 27% in 410.

Social differences are also important in the several neighborhood areas with concentrations of blacks in the Central area, student housing in the Central and South Central areas, a large Italian community in the South Central area and smaller concentrations of Irish and Polish groups throughout the South Troy neighborhood.

Commercial

Land Use

The area's closest supermarkets are two small establishments located at Ferry and Congress Streets. The greatest concentration of neighborhood and community commercial establishments is along Fourth Street between Jefferson Street and the Central Business District. Stores are small in size with many located on 25' X 120' lots or on corner lots of smaller dimensions. In many cases, the upper floors of the building also have a residential use. The commercial area has several vacant storefronts and conversions to residential use. Additional vacant lots, converted and vacant storefronts appear outside of the Fourth Street commercial area.

The predominant neighborhood orientation of existing stores and commercial establishments and a low availability of automobiles make pedestrian access important. Off-street parking and service areas are generally limited or not provided. Parking along both sides of Fourth Street severely inhibits traffic flow, particularly north of the Hill Street intersection and into the Central Business District.

Recommendations

Redevelopment and rehabilitation of commercial activity areas should be encouraged such that the Ferry Street area, east of Fourth Street, has a Central Business District orientation and that Fourth Street commercial uses are oriented to the needs of the neighborhood. One of the most important needs for either of the areas is off-street parking to ease the traffic congestion enroute to the Central Business District and to make auto access to neighborhood commercial sites more feasible. Off-

street service areas should be developed where possible with loading access to the sides or rears of buildings.

Tree planting and screening would be important in improving the appearance of the Fourth Street commercial area and a help in restoring the residential environment of the South Central area. The conversion of small stores to residential use should be allowed where possible. Heavy commercial uses should be encouraged to relocate to a more appropriate location, where site requirements such as off-street loading facilities, parking and screening can be provided.

Heavy Commercial - Light Industrial - Industrial

Land Use

Since the removal of the railroad, loss of the Stanton Brewery, Troy Cordage and residential demolition, the Fifth Avenue section has been left with large parcels of vacant land. Remaining warehousing and wholesale establishments provide little or no off-street parking and lack off-street truck access and docking facilities, causing traffic interference along Fifth Avenue and Hill Street. There are little or no provisions for protecting adjacent residential uses from visual, noise and other pollution. The image presented is, as a whole, detrimental to the quality of nearby residential uses.

Other heavy commercial uses are scattered throughout the residential neighborhood south of Adams Street. Although several provide off-street parking and service areas, most provisions are rather limited. The lack of screening and landscaping is a problem that seriously affects the quality of the surrounding residential environment.

Recommendations

The number of heavy commercial uses and their scattered locations make short range achievement of relocation efforts difficult. Transportation improvements to the Fifth Avenue redevelopment area can make Central Business District type of development (employment oriented uses) or residential construction possible there. Heavy commercial uses that cannot meet their site requirements would, however, need to be relocated. The concentration of heavy commercial and industrial uses west of Second Street (south of Adams Street) should be allowed to remain as an extension of the larger South Troy industrial area west of First Street.

Requiring provision of off-street parking, loading and service facilities, screening and landscaping are important in minimizing the impacts of heavy commercial or industrial uses upon nearby residential areas. Existing establishments should be encouraged to meet these requirements and if located within heavy commercial zones, to expand sites to meet such requirements. Truck routing must also be controlled and limited to designated streets to retain the residential quality of neighborhood streets.

Recreation Land Use

Recreation Standards

	<u>Existing</u>	<u>Standards</u>	<u>Deficiencies</u>
Playgrounds	2.02	16.82	-14.80
Parks	1.80	13.46	-11.66
Playfields	10.87	16.82	- 5.95

Recreation analysis of South Troy expressed a desire for the establishment of playfields and playgrounds and corresponding

facilities for active recreation, as also evidenced in neighborhood meeting interests in the Canal Avenue playfield and the School 12 field. Analysis also indicated significant interest in open space recreation, especially along the Poesten Kill and in Prospect Park.

Recommendations

Basically, active recreation should be primarily served through complete development of district playfields, complemented through neighborhood coverage utilizing playgrounds, parks and community center facilities. Environmentally, open space adjacent to the Poesten Kill and Wynants Kill areas, and along the hillsides should be protected and conserved. City-owned and acquired portions of these areas should be retained and identified for natural recreation utilization and as a means of linking recreation sites into the recreation open space system.

- maintenance, rehabilitation and full capacity development of existing public recreation sites, not neglecting passive uses for adults or the elderly.
- coordination and support of school and private recreation facilities and services.
- improve access to Prospect as a community park and utilization of slopes in active recreation.
- access of Poesten Kill Falls and development of Canal as a major link through clean-up, tree planting and establishing a series of recreation sites and services located along the Canal.
- establishment of park/playground sites utilizing demolished buildings and vacant areas to effect-

ively serve all neighborhoods.

- identify, acquire and preserve undevelopable hillside areas, such as ravines, slopes, hillsides and wooded areas for open space links for existing recreation sites and natural recreation utilization.
- Wynants Kill/Burden's Pond environmental conservation area and link to the Burden Iron Works historic and cultural resource area.
- encourage tree planting along major streets through residential areas and develop buffer zone between the residential and industrial areas to protect against noise and visual pollution.
- long range development of riverfront open space and bikeway in conjunction with future redevelopment of the industrial area.

Although accessibility and provision of services are a major consideration, the compatability of a residential area with surrounding established activities must also be determined. Indeed, there is a range of choice for residential densities and the site location. The general standard is to encourage high densities in close proximity to permanent open spaces and nearest to the thoroughfares and transit system and community serving shopping centers; with lowest densities in the interstices between thoroughfare and transit systems. Compatability criteria for residential development also includes freedom from hazards of floods, fog, smoke, noxious odors, nuisance industries and the like.

The above considerations are illustrative kinds of factors which guide the location of a functional residential area within

the framework of the land use plan. It should be noted that there will be variations from one urban area to another. For example, cities in mountaineous areas will have emphasis differing from those in the Great Plains. For the City of Troy and the particular development plan to follow, the emphasis will be upon Coastal Zone Management Criteria which are to be considered.

Map Development

The development of a final Coastal Zone Management Plan map is in fact, the culmination of input from each previous work item.

The layout of suggested land use for each parcel is a delicate balance of Coastal Zone Management goals and objectives, economic analysis, neighborhood need recommendations and the capability of physical land support required by each development type (See Appendix A).

Each parcel of developable land was considered as a resource which was influenced by the various development pressures mentioned above. For example, while the Coastal Zone Management goals and objectives have as highest priority, the preservation and revitalization of the Coastal Zone we must also realistically consider the socio-economic characteristics and respective recommendations for each land-use type at both the neighborhood and city-wide levels.

In most cases, the Coastal Zone priority outweighed the various other considerations. This is quite evidently reflected in the fact that a large percentage of land use suggested is of the Recreation/Open Space category. However, it is just as

evident that the other factors have been balanced in each case. This map-plan will be the input for the Coastal Zone ordinance to follow this work item. The Coastal Zone Management Plan has, therefore, progressed logically through an analytic procedure to culminate in this mapped Coastal Zone development plan followed by the implementary Coastal Zone Ordinance.

APPENDIX A

LAND USE SUPPORT CRITERIA

RESIDENTIAL LAND USE REQUIREMENTS

Urban residential land use requirements may include a wide range of physical characteristics and varying configurations. However, unlike standard requirements for industrial or commercial development, residential development must also encompass a functional complexity of inter-related site and locational requirements.

Site and Locational Requirements

Although residential developments may differ in size, densities, type of dwellings, etc., there are very general standards and considerations which are required for proper location of a residential community.

The first and most important consideration is that of environmental and physical features of any proposed site. Generally, residential development may occur on a terrain with variety, offering fairly level or rolling and hillside sites depending on the topographic characteristics of the urban area, but avoiding steep or irregular sites and low or poorly drained areas. A slope usually under 15 percent is considered for a potential development site. These same factors will also determine the feasibility of providing municipal service utilities and the transportation networks within a residential development.

The potential site must also meet accessibility criteria for various destinations. The area must be in close proximity to major thoroughfares and transit system with direct connections to work and leisure-time areas. The site should be bounded, but not penetrated by major streets; and internally served by a system of collector and service streets fitted to the terrain, with consideration to drainage, sunlight and views, etc.

In conjunction with accessibility, the site must be suitable for an integrated design of the residential area and related shopping, school, church and recreation facilities, including community-serving and the neighborhood-serving facilities. The following chart illustrates the integrated design standards to be included in residential development criteria.

<u>Use</u>	<u>Max. Distance or Time</u>
Employment	1 hour
Regional Shopping Center	3/4-1 hour
Local Shopping	1/2-1/4 mile
Elementary School	1/2-1/4 mile
Junior High School	1/2 mile
Senior High School	1 mile
College, Special Schools	3/4-1/2 hour
Churches	1 mile
Hospital	3/4 hour
Playground	1/2-1/4 miles
Playfield	1/2 hour
Regional Recreation Facilities	3/4-1 hour

RETAIL-SERVICE LAND USE REQUIREMENTS

The land use requirements of retail stores and service establishments are similar in terms of their site requirements, location requirements in relation to their market area, and transportation and access needs. This similarity has been conducive toward combining these uses in groupings advantageous to the retail and service establishments themselves, their adjacent land uses and to the consumer. Within Troy, the centralization and coordination of retail and service establishments may be organized at two levels: neighborhood-community commercial and Central Business District commercial. The primary factors involved are repetitive access patterns and the special conditions that define a market area.

Location Requirements

The cost of movement for the consumer to and from a land use location is related to the frequency of travel. By centralizing retail and service establishments, the cost of travel for the consumer is reduced and the expense of energy cut down. Significantly, an organized commercial area is more convenient for the customer. The cost and quality of goods and services may be easily compared and other uses, incidental to the shopping trip but located nearby, are readily accessible. Based on the frequency of movement, the most frequented retail or service establishments, such as food markets, drug stores, laundries, etc. should be located to serve at the neighborhood level. On the other hand, retail establishments selling home furnishings or major household equipment, for example, look for proportionately less frequent purchases from a larger market area, rather than repeated purchases from the neighborhood area.

Other locational advantages of centralization are also apparent. The large business needs to be situated convenient to its "house-keeping" contacts (warehousing facilities, finance services maintenance services) its production contacts (goods and service specialists) and the non-work related contacts of its employees (who may come from diverse and distant locations and have during their off-time a variety of retail, service and other contacts.)

The market areas for retail-service establishment organization may be defined in terms of the physical patterns and boundaries of residential areas and the social and economic characteristics of their residents. These special characteristics that define neighborhoods and communities then also determine the scope and nature of the retail-service establishment zones.

Site Requirements

The advent of shopping centers at the neighborhood, community and regional levels can be viewed as a recognition of the advantages of site maximization through organized commercial development. But maximum site utilization is not an idea that is restricted to just new shopping center development. It is a concept that may

be applied in guiding the redevelopment and organization of already existing street-front neighborhood and community shopping areas. The slowdown in shopping center construction and greater emphasis on smaller, more practical development expected in the short range future may be viewed as an indication of the possibilities for improving and developing the viable, existing commercial areas within cities.

"According to the Shopping Center Council, in 1975, 91.3 percent of the new centers will be in the suburbs and 8.7 percent in the central business districts. By 1977, the suburban trend will slow to about 78 percent and the downtown will be about 22.2 percent, although the total number will be down in both categories." *

The structure of existing commercial areas and the traffic circulation problems of Troy's street system call for innovative solutions by Troy's commercial establishments to provide adequate off-street parking areas and automobile entrance-circulation-exit ability. Alternative solutions for providing off-street parking include: joint development of parking on vacant parcels, development of parking and service areas in the rear of the many smaller establishments with access from sidestreets and alleys, and multi-use parking areas. In the Central Business District, the construction of parking garages would significantly maximize utilization of the limited quantity of available Central Business District land area. Adequate off-street area and access for loading and other services must also be provided. To protect adjacent residences, environmental or other uses and to present an aesthetically appealing appearance for the commercial areas' customers, controls of visual and noise pollution, such as screening of service areas, landscaping of parking areas and sign control, should be implemented.

Transportation Requirements

Commercial areas should be located such that these areas are easily accessed from the community or neighborhood by both automobile and pedestrian transport modes. A typical maximum service radius for a neighborhood commercial area is one-half mile and for the more community oriented commercial centers, one and one-half miles.

The location of these commercial areas should be such that they are organized along the major streets or paths serving the neighborhood or community and readily identifiable and recognized by their customers.

Population density, availability of bus service and the level of car ownership are some factors that affect the access requirements

*

The New York Times, "Lean Times for Shopping Centers", Business and Finance Section 3, pg.1, March 16, 1975.

commercial areas. High population density within a market area requires larger commercial centers and customer access that is more pedestrian oriented. Bus service availability increases a commercial area's service radius and requires special consideration in developing bus stopping points and facilitating traffic movement. A high community reliance on automobiles not only increases the need for a greater availability for parking, but also requires special consideration in entrance - exit development and in location of the commercial area along roads and intersections capable of being developed to serve the amount of traffic generated.

Greater emphasis is being placed today not only on the proper development of pedestrian and roadway health and safety aspects, ~~but~~ also on the aesthetics of the access environment. Psychological threats against safety, such as passage near or through pollution associated industrial areas or blighted "undesirable" neighborhoods may deter many shoppers from frequenting an otherwise quality commercial area. The sensitive aesthetic values and velocitized point of view developed in automobile drivers should be an important consideration in developing a proper route environment to commercial areas.

WHOLESALE LAND USE REQUIREMENTS

Although Albany County serves at present as the wholesale center for the region, Troy could share in regional wholesale trade growth with the development of transportation links coordinated with the locational and site requirements of wholesale trade.

Site and Locational Requirements

The various wholesale classifications differ in such characteristics as their size, volume of trade and relation to their particular consumer. Generally, individual sites are usually under 5 acres in size and are best served, especially in terms of transportation, when grouped as wholesale centers and when located appropriately with regard to their consumer orientation. Merchant wholesalers, sales branches and wholesale brokers and agents deal more in assembly, storage and distribution of goods directly with the retail or industrial consumer than do trucking facilities and terminals, where only a small percent of their business is derived from CBD activities. Large product retail establishments and mixed retail-wholesale businesses also present a need for adequate storage areas, yet at a location convenient to the CBD and consumer access. Other wholesale businesses, such as petroleum and petroleum product storage facilities, require special consideration in site location and development.

Reasonably level land, capable of being inexpensively graded is generally preferable for wholesale sites. Sites must provide adequate off-street parking, loading-unloading and service areas. Additionally, buffer areas must be developed within these heavy commercial zones to curb noise levels and to limit visual pollution affecting adjacent residential, environmental or other land uses. Screening and landscaping of service and parking areas should be required. Land area for future expansion of existing businesses or for future new development should also be considered.

Transportation Requirements

Direct access to trucking routes and major street systems are the most important criteria for wholesale location to efficiently receive incoming goods and distribute outgoing deliveries. Wholesale centers are best served in terms of transportation when situated with commercial street frontage and near major transport routes. Proper location of wholesale establishments and development of buffer zones are two important considerations in the control of excessive truck noise levels along roads that pass through or near residential areas. Heavy commercial zones near the Central Business District should also present an acceptable route environment for the consumer, passing by on the way to the Central Business District.

The environmental protection and safety requirements for petroleum or other product storage facilities within the region and the City

that utilize the transport capabilities of the Hudson River and the canal system, should receive careful environmental assessment. Site locations with access to railroad transportation, although of importance to a relatively minor proportion of wholesale establishments, should also be available.

INDUSTRIAL LAND USE REQUIREMENTS

The general trend in employment has been a decrease in emphasis on manufacturing with increasing diversification and expansion of the employment base in such non-manufacturing areas as government, services and wholesale-retail trade. Although the decline in industrial employment for the region as a whole is expected to level off, its present position as the largest employment group will be superseded by the government and service groups. Within the region, manufacturing has also tended to diversify its scope, primarily toward higher value-added production with decreasing employment in the lower value-added industries. The dominance of the textile-apparel industry and relatively restrictive transportation access conditions present aspects of Troy's manufacturing base than have differentiated it from some of the general conditions and trends of manufacturing in the region.

In terms of employment and industrial area locations, it should be remembered that Troy is related to the economy and structure of the region, as evidenced in the large proportion of employment exchange among Troy and its neighboring cities and counties. Today, in view of the increasingly intense competition throughout the nation to attract new industrial development, a close coordination with regional and state industrial location efforts must be established and maintained. Assessment of Troy's industrial areas should bear in mind the need for balancing the requirements of industrial land utilization with the needs of other land uses. Troy's major industrial area has vacant land available for either accommodating the relocation of expanding non-compatible industrial or light industrial uses from other sections of the city or for possibly attracting new industry. In either case, proper redevelopment of the area can be an important step towards alleviating the problems of its adjacent residential areas and in improving the living quality of Troy in general.

Site Requirements

The nature of developable industrial land requires that the site be level, solid in composition and well drained. Size and coverage requirements vary according to the amount of land available for industrial use and the scope of the industry utilizing the land, in terms of conflict with adjacent uses, transportation availability and the necessary present and anticipated future building and facility requirements of particular firms.* Feasible industrial area sizes range from a minimum of 80 acres to 150 acres (with plants averaging 50,000 sq. feet) or more,** depending on the size of in-

* With respect to reuse of large multi-story structures, a recent innovation in the N.Y.C. area has been the vertical industrial park. Both private and city-sponsored developers feel that a properly modernized vertical industrial park located in the City, with all its transportation and other advantages, can compete successfully with the horizontal facilities in the suburbs. (New York Times, "A 'Vertical Industrial Park' is Planned," March 4, 1975, p.21.

** Joseph D. Chiara and Lee Koppelman, Planning Design Criteria, 1969, p.250.

dividual plants.

Typical lot coverages may range from 30% to 60%, although within urban areas, the tendency is toward higher lot coverage percentage. Adequate land must be available for road and rail docking and movement. To protect any adjacent residential, environmental or other conflicting uses, adequate buffer zones should be established and landscaping and screening must be provided to offset any visual and noise pollution that would adversely affect the quality of the neighboring uses. Additionally, safeguarding performance standards must be established for control of noise levels; vibration levels; smoke, dust and particulate matter; excessive heat emissions; odorous, toxic or noxious emissions; radiation hazards; and fire explosive hazards.

Transportation Requirements

Transportation is a key factor in access to supplies and to markets for industrial, warehousing and wholesale firms. Historically, Troy had been able to compete with other cities in the region until the advent of land transport routes and the use of trucks. The "Rensselaer County Industrial Survey" indicated that 74% of industries responding in the county, relied exclusively on truck transport, with the remainder using both truck and rail service. Transportation problems for industry in Troy have included:

1. Lack of adequate road and bridge connections to major transport routes (access to regional and national markets)
2. Utilization of local streets (traffic and noise problems)
3. Inadequate off-street docking facilities and access-egress (traffic and service problems)
4. Inadequate off-street parking for employees.
5. Decreasing rail access and service.

Utilities

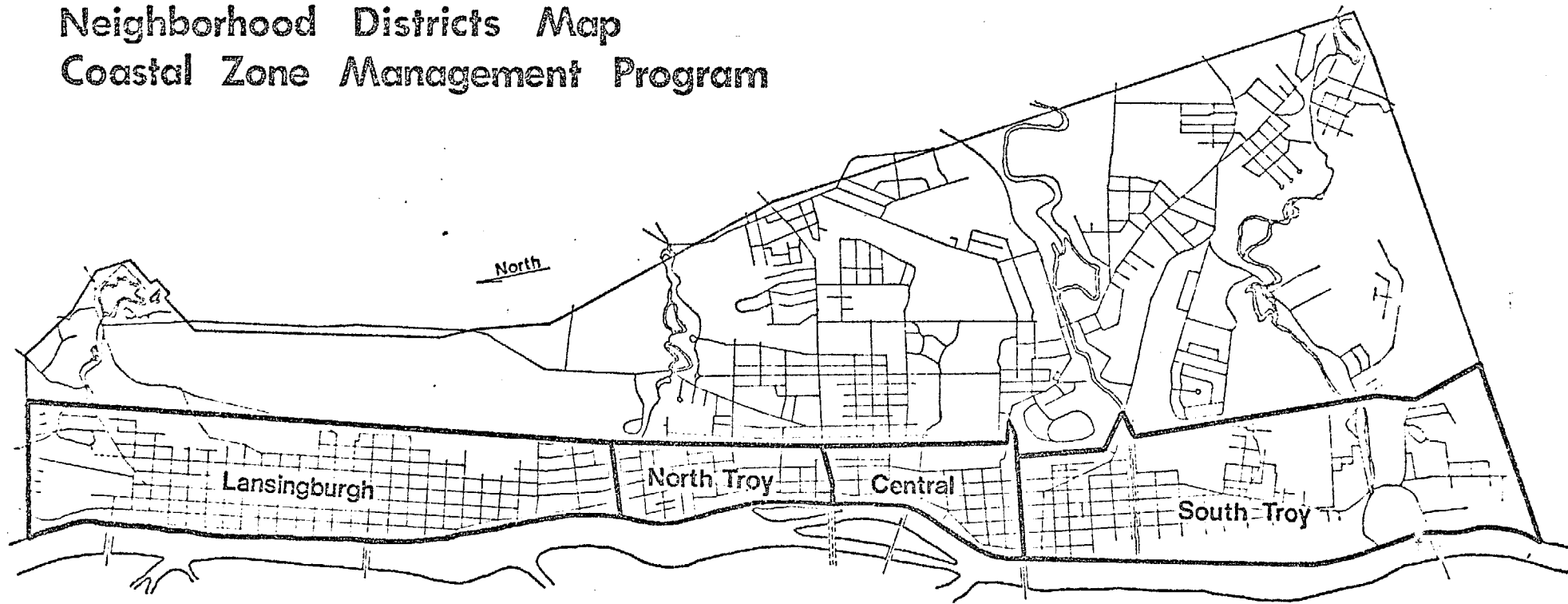
Utility systems including water supply, waste disposal, electricity, gas and telephone services are an important part of industrial operations. 80% of the firms responding in the "Rensselaer County Industrial Survey" were located in areas where water and sewage disposal facilities were already existant. It should be noted that utility systems' provision or rehabilitation require a substantial public investment. This cost should be considered as an important criteria in the development or expansion of industrial areas.

Amenities for Industry

An important trend within business and industry is that of social responsibility. Increasingly, industrial and business managements are looking to provide safe, modern, well designed and pleasant facilities to serve the needs of their workers to promote the quality of industry and business and to better their image for the scrutinous public eye. Evidence of this can be seen in the modern, landscaped quality of new and rehabilitated sites, in the trend of new industries to locate in areas peripheral to residential centers and especially in industry's mandate of concern for the environment. Many larger industrial firms are also providing better and more dining, leisure and recreational facilities for their workers.

A labor force is an investment for industry both in terms of wages and personnel. The productive, skilled labor force needs quality housing and the educational, health and leisure facilities and services necessary to the enjoyment of life. The industrial management interested in retaining its skilled workers, is conscious of the need for developing and protecting these qualities of life for their work force. Within this context lies the basis for the balance of and development of industrial, commercial and residential land use.

Neighborhood Districts Map
Coastal Zone Management Program



City of Troy Coastal Zone Work Program
Work Item 9.2
COASTAL ZONE LEGISLATION

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I Purpose

The purpose of this ordinance is to guide and direct development and other land use activities along the Coastal Zone considering the suitability of each area for such uses and future needs for various types of land development. Moreover, there exists certain unique qualities of the Coastal Zone which require special consideration and protection in the conduction of this activity. More specifically, it is the intent of this Ordinance to:

1. Encourage effective land use management in the Troy Coastal Zone.
2. Protect the Troy Coastal Zone and its ecosystems from adverse environmental impact.
3. Ensure the preservation of historic, cultural and aesthetic resources of the Troy Coastal Zone area.
4. Stimulate interest in, access to, and utilization of the Coastal Zone as a natural resource and as recreational open space.

II. General Provision

A. Required Review

No permit shall be granted by the Superintendent of Buildings for major construction or alteration of properties within the defined area entitled the Troy Coastal Zone District (Section 4) until a Coastal Zone Assessment and Site Plan have been reviewed by the City Environmental Commission and City Planning Commission.

B. Nature and Objectives

During the reviews and notwithstanding other regulations and requirements which may apply, the Commission shall take into account the impact and value of a proposed development regarding:

1. Environment of the adjacent land area including the impact of noise, vibration, air quality, soils, water table, vegetation or fauna.
2. Ecosystems of the River, its tributaries, wetlands, marshes, swamps, bays or ponds.
3. Scenic or aesthetic properties of the Coastal Zone.
4. Suitability of the land for other uses, primarily for recreational or open space purposes.
5. Historic or cultural resources of the City. (Impacted by proposed development.)
6. Compliance with the provisions of the Federal Flood Insurance Program.
7. General Development patterns of the City. (Impacted by proposed development.)

IV. Procedure

Prior to the submission of a formal site plan, the applicant shall meet with the Planning or Environmental Commission or their representatives to discuss the proposed development so that the necessary subsequent steps relative to securing final approval may be explained.

Sufficient copies of the proposed development plan shall be submitted to the Bureau of Planning and Community Development at least 14 days prior to the Planning Commission meeting at which approval is requested. This application shall be made on forms provided by the Bureau of Planning and Community Development and attached hereto.

Upon receipt of these plans, the City Planner shall evaluate the proposal as to whether it should be considered a minor or major development project. In this evaluation, he shall use the following criteria:

1. Value of proposed development (cost)
2. Size of proposed development (acreage, sq. ft., etc.)

3. Obvious environmental impacts(considering, fragile and irreplaceable resources such as marshes, estuaries and the inter-tidal area).
4. Change in land usage and conformity with Coastal Zone Development Plan.

He then shall forward a copy of the proposed development to the Environmental Conservation Commission for review and comment. Failure to act upon the proposed development plan within the 14 days provided shall mean approval of the project by the Environmental Commission.

A. Minor Development Proposals

When a proposed development is determined to be minor in relationship to the Coastal Zone (see definitions), the applicant shall not be required to prepare a detailed environmental impact report. However, the applicant must be prepared to answer questions by the Planning Commission and Environmental Commission relative to the anticipated impact of his development on the Coastal Zone.

B. Major Development Proposals

In those instances where proposals within the Coastal Zone District are determined to have major impact (see definitions) upon the Coastal Zone, the applicant must provide a detailed environmental impact statement which specifically demonstrates the anticipated impact on the environment of the proposed development. In preparing this report, the applicant will be asked to discuss the proposal as it relates to the considerations listed in Section 2. No major proposal shall be approved by the Planning Commission until a satisfactory environmental statement has been proposed by the applicant.

C. Joint Consideration

In circumstances where the applicant or reviewing bodies disagree with the City Planner's determination or when time demands immediate action

on a major development proposal, the applicant may request a special joint session of the Environmental Conservation Commission and Planning Commission (or at the descretion of the Commission, subcommittees of same) to discuss the potential environmental impacts of the proposal. The findings of this joint session shall be final and binding upon all parties and a record of the joint session decision shall be kept on record and presented in each subsequent action.

Such joint session shall not preclude the applicant from complying with provisions of any other applicable law, ordinance or application procedure.

III. General Regulations

A. Except where otherwise noted, no provision of this ordinance shall be construed to prevent the ordinary maintenance and repair of any property located in the Coastal Zone nor to supersede the location of land uses as allowed under regulations of the Zoning Ordinance of the City of Troy. However, due to the unique value and circumstances of the Coastal Zone, it is necessary to impose additional regulations on proposed development in the Coastal Zone Area. Compliance with Federal Flood Insurance Programs - each property located in the Flood Zone as established by H.U.D. must adhere to the regulations of the Federal Flood Insurance Program as described in the Rules and Regulations in the Federal Register Chapter X - Federal Insurance Administration, Department of Housing and Urban Development, Subchapter B - National Flood Insurance Program, Part 1909 General Provisions.

B. Uses Prohibited

The following specific uses included herein, for enumeration and not limitation, are not permitted in any location in the Coastal Zone.

Auto Wrecking Yards

Mobile Homes & Mobile Home Courts

Drive-In Theaters

Junk Yards

Industrial Uses which do not comply with pollution control standards as specified in the City Zoning Ordinance, Section 402.10 G (a-f) inclusive - Any open air storage of materials, chemicals or supplies without the provision of sufficient preventive measures to assure no harmful discharge or runoff which would adversely effect the Coastal Zone directly or indirectly.

C. Exceptions

1. Municipal Use - not withstanding any other provisions of this ordinance, buildings, structures and premises necessary for the use and occupancy by the City of Troy for public or municipal purposes are hereby permitted.
2. Waterway improvement or development directly supervised or conducted by the United States Corps of Engineers.
3. Emergency activities required to remove imminent hazards or to protect life, limb or property.

D. Special Considerations

In an effort to advance the goals of the Coastal Zone Program and to better utilize the unique qualities of the Coastal Zone in Troy, the City Zoning Board of Appeals is hereby empowered to make certain concessions in the regulations for the Troy Zoning Ordinance pertaining to land use, set backs, height requirements, parking, lot coverage and density.

In each case, the applicant must demonstrate to the satisfaction of the Zoning Board, that relief from the established regulations of the Zoning Ordinance would not jeopardize the health, safety, morals or general

welfare of the City of Troy and how the proposed relief will either: encourage effective land use management within the Coastal Zone, Protect the Troy Coastal Zone and its ecosystems from adverse environmental impact, ensure the preservation of historic, cultural or aesthetic resources of the Troy Coastal Zone or stimulate interest in and or access to the Coastal Zone as a natural resource or recreation open space area.

Definitions

1. Applicant - Any person making an application or other request for Planning Commission action.
2. Coastal Zone - That land, water, and inter-tidal area that affects, or is affected by, oceanic characteristics.
3. Environment - The physical conditions which will be affected by a proposed action including land, air, water, minerals, flora, fauna, noise, objects of historic or easthetic significance, existing patterns of population concentration, distribution or growth and existing community or neighborhood character.
4. Environmental Impact Statement - a written document prepared to deal with the reasonably anticipated impacts a proposed action may have upon the environment in genetal and specifically upon the Coastal Zone.
5. Major Action - Actions or types of actions that are likely to require preparation of environmental impact statements because they will in almost every instance have a significant effect on the environment.
6. Minor Actions - Actions or types of actions which have been determined not to have a significant effect on the environment and which do not require environmental impact statements.

Coastal Zone Boundary Map

